



**Alaska**  
**Department of**  
**Transportation**  
**and**  
**Public Facilities**

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**Alaska**  
**Storm Water**  
**Pollution**  
**Prevention Plan**  
**Guide**



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## List of Acronyms

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AASHTO	American Association of State Highway and Transportation Officials
ATS	Active Treatment System
ADF&G	Alaska Department of Fish and Game
AK-CESCL	Alaska Certified Erosion and Sediment Control Lead
APDES	Alaska Pollutant Discharge Elimination System
BMP	Best Management Practice
CGP	Construction General Permit
CISEC	Certified Inspector of Sediment and Erosion Control
COE	Corps of Engineers
CPESC	Certified Professional in Erosion and Sediment Control
CWA	Clean Water Act
DEC	Department of Environmental Conservation
DOT&PF	Department of Transportation and Public Facilities
EPA	U.S. Environmental Protection Agency
ESCP	Erosion and Sediment Control Plan
FHWA	Federal Highway Administration
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NOI	Notice of Intent
NOT	Notice of Termination
MLLW	Mean Lower Low Tide
MS4	Municipal Separate Storm Sewer System
PAM	Polyacrylamide
PS&E	Plans, Specifications, and Estimate
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USFWS	U.S. Fish and Wildlife Service

# 1 Introduction

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- 1.1 Purpose of Guide
- 1.2 Summary of Applicable Water Quality Laws and Regulations

## 1.1 Purpose of Guide

The Alaska Department of Transportation and Public Facilities (DOT&PF) is committed to preventing stormwater runoff from polluting the nearby environment at Department properties, facilities, and activities. This guide helps contractors, consultants, and the public understand and comply with the requirements of the Alaska Pollutant Discharge Elimination System (APDES) Storm Water Construction General Permit (CGP) for small and large construction sites. Specifically it assists in developing an effective Storm Water Pollution Prevention Plan (SWPPP) required for coverage under the CGP. More detailed information on implementing a SWPPP can be found in the DOT&PF SWPPP Template, Forms and Form Instruction at: [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_conforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_conforms.shtml). Any reference to “you” or “the contractor” in this guide refers to the contractor or contractor’s designee.

A project may require coverage under the National Pollutant Discharge Elimination System (NPDES) CGP (e.g. projects within the Metlakatla Indian Reservation or within Denali National Park or Preserve). These are rare and this guide may not adequately address the permit requirements for these types of projects.

Erosion is a natural process that can be accelerated by human activity. Construction activities such as removing vegetation, disturbing soil, and redirecting drainage can increase the natural rate of erosion and allow soil particles (sediment) to easily wash away during a storm.

A SWPPP describes all planned controls for erosion and sediment on site. The SWPPP lays out the steps and techniques, in addition to inspection and maintenance procedures, used to reduce pollutants in stormwater runoff leaving the construction site.

You may use a variety of control measures referred to as Best Management Practices (BMPs). The BMPs form the basis of the SWPPP, and the contractor must select them based on the conditions at the construction location. Design, construct, inspect, and maintain the

BMPs properly during the life of the project to assure that the SWPPP is effective (see: Section 2.2.3. of this *Manual*).

## 1.2 Summary of Applicable Water Quality Laws and Regulations

Federal and state laws exist to minimize environmental harm from stormwater discharge at construction sites. Some laws and their associated regulations require implementing erosion and sediment control measures while others mandate that construction activities maintain water quality. Two important water quality related laws and regulations are the amended Federal Water Pollution Control Act (Clean Water Act or CWA) and the Alaska Water Quality Standards, found in Title 18 of the Alaska Administrative Code (*18 AAC 70.005*).

### 1.2.1 Clean Water Act

The Clean Water Act is intended to restore and maintain the chemical, physical and biological integrity of U.S. waters. CWA sections related to regulating construction storm water are outlined below.

**Section 401:** Authorizes states to comment on any federal permit when it has the potential to affect water quality. The Alaska Department of Environmental Conservation (DEC) can add conditions to the federal permit. These conditions would be found in the “401 Certification.”

**Section 402:** Authorizes the National Pollutant Discharge Elimination System (NPDES), a wastewater discharge program that includes regulating stormwater runoff. Most states have delegated authority to manage the NPDES on behalf of the Environmental Protection Agency (EPA). Alaska began managing this program as the Alaska Pollutant Discharge Elimination System (APDES) in October 2009 (*See: AS 46.03 and 18 AAC 83*). DEC manages the Construction General Permit (CGP).

For complete regulatory information on the Storm Water General Permit for Large and Small Construction Activities, visit the following website: <http://www.dec.state.ak.us/water/wnpssc/stormwater/index.htm>

**Section 404:** Authorizes the Army Corps of Engineers (COE) to issue permits to place dredged or fill material in all waters and tributaries of waters used

for interstate or foreign commerce, territorial seas, tidal waters, interstate wetlands, and waters with a significant ecological nexus to the any of the above waters. The EPA produces guidelines for permitting criteria under Section 404.

### 1.2.2 Water Quality Standards

Water quality standards developed by DEC are found in 18 AAC 70. The standards are based on the use of the water body. The use categories are:

- water supply,
- recreation, and
- fish propagation and growth.

Standards vary based on whether they affect fresh or marine water. The CGP requires that erosion, sediment, and pollution control measures be selected so that pollutant discharges are minimized as necessary to meet the applicable water quality standards. The current water quality standards are available on the DEC's website at:

<http://dec.alaska.gov/water/wqsar/wqs/index.htm>.

The next sections cover other federal and state laws and regulations concerning stormwater discharges from construction activities.

### 1.2.3 The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

ISTEA Sec. 1057 requires erosion control guidelines be developed for all federally funded highway construction projects. To comply, the Federal Highway Administration (FHWA) adopted the American Association of State Highway and Transportation Officials' (AASHTO) "Highway Drainage Guidelines." All state highway agencies adhere to these AASHTO guidelines for their federal highway projects.

The *Alaska Highway Drainage Manual* describes DOT&PF's adoption of the AASHTO guidelines in Chapter 16. The *Alaska Aviation Preconstruction Manual* also uses these guidelines for FAA-sponsored aviation projects.

Chapter 16 requires a SWPPP for all projects that disturb earth, regardless of project size. For small projects disturbing less than 1 acre of land, the detail of the SWPPP may be commensurate with the complexity and water quality risk of the project. Water quality standards must be met regardless of project size.

### 1.2.4 Alaska Statutes 16.05.841 and 16.05.871, Fish Passage and Anadromous Fishes

The Alaska Department of Fish and Game (ADF&G) regulates construction and other activities in specified streams designated as important for the spawning, rearing or migration of anadromous fish or that affect fish passage in streams with resident fish. A Fish Habitat Permit (Title 16 Permit) may be required for any activity that:

- involves a hydraulic project,
- uses, diverts, obstructs, pollutes, or changes the natural flow or bed of specified river, lake or stream, or
- uses wheeled, tracked, or excavating equipment or log-dragging equipment in the bed of a river, lake, or stream.

Examples of such activities include bridge and culvert work, stream diversions, bank stabilization, water withdrawals, and repetitive crossing of anadromous streams by vehicles.

Title 16 generally does not apply to activities in a marine environment. However, projects affecting the mouth of a stream, defined by a line drawn between the seaward extremities of the exposed tideland banks at Mean Lower Low Tide (MLLW), will require a Fish Habitat Permit.

ADF&G's jurisdictional boundaries are depicted in the following diagram:

[http://www.adfg.alaska.gov/static/license/uselicense/pdfs/ord\\_hi\\_wtr.pdf](http://www.adfg.alaska.gov/static/license/uselicense/pdfs/ord_hi_wtr.pdf)

## 2 SWPPP Process and Plan Requirements

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- 2.1 Introduction
- 2.2 General Process

### 2.1 Introduction

The Storm Water Pollution Prevention Plan (SWPPP) complies with the DEC Construction General Permit (CGP). The CGP incorporates the provisions of the effluent limitations guidelines for the construction and development industry.

The SWPPP is an important part of the planning process. It is a site-specific written storm water management plan that demonstrates how the applicant intends to comply with each requirement in the CGP. It must be prepared before a Notice of Intent (NOI) for permit coverage can be issued under the CGP (See: Sec. 2.2.8. of this manual). The DOT&PF *Standard Specifications for Highway Construction* requires that in most cases a SWPPP be approved before any construction activities commence (*Standard Specifications Sec. 641*).

Any earth-disturbing activities associated with a DOT&PF project must address erosion and sediment control. The CGP defines an “Earth-disturbed area” as a portion of any site that has been altered from pre-existing conditions, including but not limited to:

- providing access to a site,
- grubbing and clearing of vegetation (including the roots),
- grading and earth moving,
- altering land forms, or
- other construction-related activities including stockpiles.

A SWPPP2 is used when construction activity outside the Project Zone requires permit coverage per *Standard Specification 641-1.03.4*. The Project Zone is defined in the *Standard Specifications* as:

“(T) he physical area provided by the Department for construction. The Project Zone includes the area of highway or facility under construction, project staging and equipment areas, and material and disposal sites; when those areas, routes and sites, are provided by the Contract.”

Material sites including material processing sites, disposal sites, haul routes, staging and equipment storage areas furnished by the contractor or commercial operator, are not included in the Project

Zone. For all contractor-furnished material sources that are not a commercial plant, the contractor will certify to the engineer that all permits and clearances relating to the use of the material source have been obtained prior to any clearing or ground disturbance in the material source.

This chapter describes the planning process for projects that disturb one or more acres of land or smaller parcels that are part of a larger plan of development and that drain to U.S. waters.

The flowchart in **Figure 1** illustrates the stormwater permitting process for DOT&PF projects.

### 2.2 General Process

The success of a SWPPP requires a cooperative effort between DOT&PF and the contractor to meet their responsibilities in making the plan effective. The contractor and the Department are co-permittees as both meet the definition of operator on a DOT&PF construction project.

The EPA guidance publication *Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites* outlines the process for developing and implementing a SWPPP for construction activities in the following general steps:

1. Site assessment and planning
2. Selecting erosion and sediment control and good housekeeping BMPs
3. Inspections, Maintenance and Recordkeeping
4. Certification and Notification
5. SWPPP Implementation
6. Final Stabilization and Permit Termination

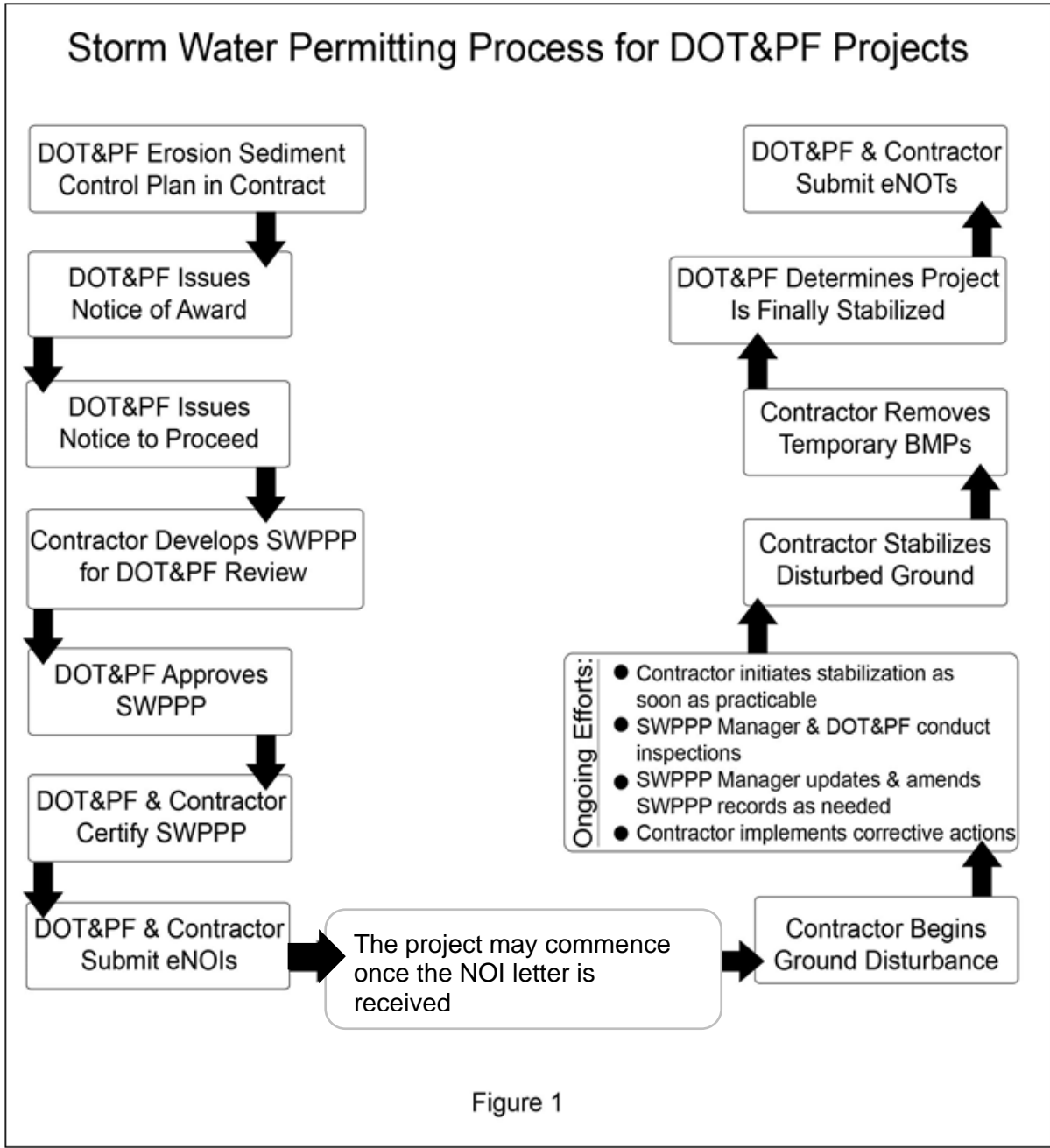
The EPA SWPPP Guide is available here:

[https://www3.epa.gov/npdes/pubs/sw\\_swppp\\_guide.pdf](https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf)

#### 2.2.1 Site Assessment and Planning

An Erosion and Sediment Control Plan (ESCP) is a planning document developed by the DOT&PF Design Section that gives bidders a basis for estimating costs and developing an acceptable SWPPP. It is included in the Plans, Specifications, and Estimate (PS&E) package.

An ESCP explains site conditions and illustrates measures to control erosion and pollution. It provides a workable plan that still allows the contractor latitude



to develop a sequence of operations based on season, site conditions, personnel, and equipment.

Using the ESCP and their own construction sequence, the contractor submits the SWPPP to the Department. The project engineer reviews the SWPPP within 14 days after it is received. If the SWPPP is rejected, the engineer will list the reasons for its denial. When the contractor submits a revised SWPPP, the 14 day review period starts again. This is repeated until the project engineer approves the SWPPP.

The SWPPP must address all sections of the DOT&PF SWPPP template, with careful attention to the

sequence of major earth-disturbing activities and the installation sequence of all controls specified for the project. Note that a typical project schedule does not contain enough detail about the erosion and control measures to meet this SWPPP requirement.

The contractor’s SWPPP preparer conducts a preconstruction site visit to assess the existing site conditions, and identify stormwater systems, receiving waters, pollutant sources, and non-stormwater discharges. The preconstruction site visit is documented on DOT&PF Form 25D-106. The



preconstruction site visit must occur before construction activities begin, and it should identify:

1. Opportunities to phase construction to minimize exposed ground and erosion potential,
2. Appropriate BMPs and BMP sequencing, and
3. Sediment controls that must be installed prior to starting earth-disturbing work.

If the SWPPP is prepared when the ground is snow-covered, the site visit may be postponed and conducted after the SWPPP is written. If this is the case, use the site visit to verify that the three considerations listed above are adequately addressed in the SWPPP. If they are not, amend the SWPPP accordingly.

The SWPPP must be completed, approved and certified prior to seeking coverage under the CGP, as described in Section 2.2.8. Once the SWPPP is certified approved the contractor must provide one electronic copy and three hard copies of the SWPPP to the project engineer at least 21 calendar days before the planned start of construction activities.

The contractor's certified SWPPP becomes the project's SWPPP of Record.

### **2.2.2 Plan Contents**

For projects requiring CGP coverage (one acre or more of ground disturbance and drains to the waters of the U.S.), DOT&PF requires that the SWPPP preparer use both the DOT&PF SWPPP Template and the DEC SWPPP template. The DOT&PF SWPPP Template explains how to modify the DEC Template to meet both DOT&PF requirements and CGP. The most current version of the DOT&PF SWPPP Template is provided in Appendix A. It is also available online at: [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_consfirms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_consfirms.shtml).

The SWPPP preparer should use the SWPPP Checklist in Appendix A of this Guide to review the draft SWPPP and ensure all requirements are met. Using a template ensures that the SWPPP is complete and prepared in a consistent order and format. However, you are cautioned to start every SWPPP with a blank template rather than one completed for a different project in order to avoid errors of mixing projects.

This section provides some general information for preparing the SWPPP content; however, the SWPPP

Template and the checklist are the best resources for preparing the SWPPP.

All SWPPP related forms and form instructions mentioned in this guide are found at: [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_consfirms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_consfirms.shtml)

### **Endangered Species**

Review the documentation obtained by the DOT&PF on endangered and threatened species as defined by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS).

The SWPPP must evaluate whether stormwater discharges will affect listed species. Use the DOT&PF environmental document as a source of information to avoid any duplication of effort. For contractor-supplied support areas (such as material sources, staging yards and disposal areas) or contractor expansion of footprint of DOT&PF-supplied areas, consult either the USFWS website at <http://endangered.fws.gov> or <http://alaska.fws.gov/fisheries/endangered/index.htm> or the NMFS website at <http://www.fakr.noaa.gov/protectedresources/default.htm>, or one of their field offices listed in Appendix D.

If endangered species are present in work areas then consult with the project engineer and/or project environmental analyst to fill out the endangered species section of the Notice of Intent Form.

All other regulatory or agency environmental documents and permits should be added to the SWPPP under Appendix D.

### **Total Maximum Daily Loads (TMDLs)**

If there are any identified discharges into a water body with an EPA-approved or established Total Maximum Daily Load (TMDL), these must be identified on the NOI. Incorporate control measures into the SWPPP to ensure discharges of pollutants from construction activities are consistent with the TMDL.

Usually, it is assumed that if DOT&PF is compliant with the CGP, then the discharges will be consistent with the TMDL. If the TMDL specifically precludes construction site discharges, the project is not eligible for coverage under the CGP.

### **Other Applicable Requirements**

The DOT&PF environmental document and other applicable permits may be used as a source of information to show compliance with applicable federal, state, tribal, or local requirements, in order to

avoid any duplication of effort.

The SWPPP must summarize how the stormwater control measures will be implemented in compliance with other applicable requirements. This may include, but is not limited to, measures necessary to protect Outstanding Natural Resource Waters, wetlands, migratory birds, historic properties, archeological sites, and other sensitive resources adjacent to the project.

All other regulatory or agency environmental documents and permits should be added to the SWPPP in Appendix D.

If a sensitive resource such as a historic or archeological resource is discovered during construction, stop work immediately at the location and notify the project engineer or manager.

### **Control Measures**

Describe the appropriate control measures and BMPs to implement at the construction site and at off-site areas. Include BMPs for erosion control, sediment control, stormwater management measures and good housekeeping practices. Both erosion control and sediment control measures are required. An effective erosion (source) control program reduces the expense and maintenance of the sediment control program.

Describe the installation schedule for all identified BMPs and general sequence of stabilization practices to be implemented at the construction site and the off-site areas where the DOT&PF is a co-permittee. The narrative should describe the installation and sequencing in relation to the intended major activities that disturb soils (excavating, grading, filling).

Do not provide dates in the narrative. Instead, use language such as “installation will occur prior to...” or “...will occur concurrent with...” or “...will occur upon completion of...” The goal is to sequence activities to minimize the amount of time soil is exposed.

#### **2.2.3 Selecting Erosion and Sediment BMPs**

Two key ways to prevent erosion and reduce sediment transport are to (1) ensure existing vegetation is preserved wherever possible and (2) to minimize the amount of disturbed land at any one time. The sooner stabilization is achieved in areas where work has stopped, the less disturbed ground there is to work to stabilize.

Essential to the success of the BMPs is understanding the interaction or codependency of the BMP to control stormwater into, through and off the construction site.

The correct BMP for the situation, and the timing of the BMP installation for the particular site situation, is paramount to whether the BMPs will work.

Evaluate each BMP by its contribution to the entire system and not simply as a measure to meet a DOT&PF standard.

Appendix B provides a list of detailed BMPs to be considered during the construction of DOT&PF projects. This list of BMPs include the application, design, construction, inspection, maintenance, and removal guidelines.

The following websites provide additional current BMP information:

- *Alaska Storm Water Guide* (DEC) at <http://www.dec.state.ak.us/water/wnpssc/stormwater/index.htm>
- “National Menu of Best Management Practices(BMPs) for Stormwater” (EPA) at <https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#edu>
- International Erosion Control Association at <http://www.ieca.org/ieca>
- Construction Industry Compliance Assistance Center at [www.CICAcenter.org/bmps.html](http://www.CICAcenter.org/bmps.html)

The SWPPP must include the description and location of all BMPs to be implemented at the construction site as well as listing the contractor, subcontractor, utility company, etc. responsible for implementing each.

### **Types of BMPs**

The greatest water pollution threat from soil-disturbing activities is the introduction of sediment from the construction site into storm drain systems or natural receiving waters. Soil-disturbing activities such as clearing, grubbing, and earthwork increase the exposure of soils to wind, rain, and concentrated flows that cause erosion. There are three primary types of BMPs necessary to combat storm water:

- Stabilization (erosion control) to control erosion at the source.
- Sediment control to trap, filter and/or remove sediment before it leaves the site.
- Stormwater management to divert water around, or manage it within the site.

“Good housekeeping” BMPs prevent pollution by addressing chemicals, sanitary wastes, fuels and other pollutants, or influencing administrative action, practice or procedure, such as scheduling, training, or daily operations.

The contractor selects BMPs based on the soil properties, terrain characteristics, intensity and duration of rainfall, volume and characteristics of the stormwater flow at the location and the duration that the BMP is required to function. The next section presents a brief description of the types of BMPs and examples of each.

**Erosion Control BMPs** are measures to prevent or minimize the loss of soil from land surfaces. This can be accomplished through preventative practices and stabilization measures.

Preventative practices include site delineation, preserving vegetation and native topsoil, and phasing construction activities. The CGP requires natural buffer areas be maintained at stream crossings and around the edge of any identified U.S. waters within or immediately adjacent to the site.

Stabilization measures use ground cover to protect soils. Initiate stabilization measures immediately after temporarily or permanently ceasing construction activity on a portion of the site. The CGP sets the maximum number of days allowed before initiating stabilization. In addition, the CGP requires that permanent stabilization measures be completed, or maintained, within seven calendar days of initiating those measures.

Examples of stabilization measures include:

- Temporary or permanent seeding and mulching (BMP-52.00, 53.00, 57.00)
- Tackifier (BMP-56.00)
- Rolled erosion control products (BMP-18.00)
- Compost blanket (BMP-50.00)
- Preserving existing grass, trees, or other vegetation (BMP-38.00)

While temporary or permanent seeding and surface roughening are erosion controls, neither are considered sufficient by themselves. They must be implemented in conjunction with other compatible stabilization BMPs to effectively control erosion.

Applying mulch to disturbed soils provides water retention, soil retention, and protection for germinating seeds. Mulch should completely cover the soil surface.

A tackifier is a biodegradable adhesive that holds soil or mulch in place. Tackifier is applied from more than one direction to ensure complete coverage. Tackifier should also completely cover the soil surface or mulch. Grading and minimal compaction of slopes should occur before applying tackifier.

Erosion control devices such as mulches or Rolled Erosion Control Products often called RECP's or blankets are rated for longevity. Select the product that survives for the appropriate length of time.

Frequently, the best and cheapest preventative measure against erosion is to preserve the existing vegetation at a construction site. Vegetation limits the capacity of flowing water to detach soil particles and transport sediment in two ways. It decreases the velocity of raindrops as they hit the ground and decreases runoff volume.

Multiyear projects and over-wintering projects require fall stabilization at sites in a manner that minimizes pollution during spring thaw.

For more information about seeding methods and species, see A Revegetation Manual for Alaska and the Alaska Coastal Revegetation and Erosion Control Guide, at: <http://www.plants.alaska.gov/>

**Sediment Control BMPs** are temporary measures that minimize the amount of sediment travelling in runoff and discharges from the project.

Sediment controls that fill up too quickly indicate that the erosion controls are not functioning adequately, are installed in the wrong place or are an inappropriate BMP for the task. Sediment control examples include:

- Check dam (BMP-31.00, 32.00, 33.00)
- Rock Filter Berm (BMP-16.00)
- Prefabricated barrier system (BMP-13.00)
- Fiber rolls (BMP-10.00)
- Silt fence (BMP-20.00)
- Tracking control at exits and entrances (BMP-23.00 & 24.00)
- Drain inlet protection (BMP-25.00, 26.00, 27.00, 28.00, & 29.00)
- Silt curtain (BMP 19.00)
- Temporary Sediment Traps, Ponds and Basins

Temporary Check Dams reduce scour, reduce velocity, dissipate energy, prevent erosion, and settle sediment behind the weir structure in an unlined channel or vegetative swale.

A Rock Filter Berm is a perimeter sediment control device to prevent sediment in silt-laden sheet flow from leaving the construction site. A properly installed berm intercepts sheet drainage, contains sediment on-site, and does not permit spillover or bypass.

A Prefabricated Barrier System slows and spreads overland flows and traps sediment behind it.

Fiber Rolls shorten the slope and help to slow, filter, and spread overland flows. They capture sediment, organic matter, and seeds that might otherwise be washed downslope.

Silt Fence traps sediment, preventing it from being transported away. Silt fencing is a geotextile fabric, usually 36 inches wide, with regular spaced pockets for supporting posts. The main benefit of silt fencing is to slow runoff and cause heavier particles in the runoff to settle.

Stabilized Construction Exits are used to clean mud and sediment from vehicle tires to minimize spreading them off-site.

Storm Drain Inlet Sediment Protection is used prior to permanent stabilization of the disturbed area to prevent sediment from entering downgradient storm drainage systems.

Silt Curtains isolate work areas within or adjacent to water bodies. When properly installed silt curtains function as a floating silt fence, retaining sediment within their boundaries.

The CGP requires temporary or permanent sediment basins for projects that have a common drainage area of 10 or more disturbed acres where practicable. It must provide storage for a calculated volume of runoff from the drainage area from a 2-yr, 24-hr storm or provide 3,600 cubic feet per acre drained if the calculation is not performed.

**Storm water management BMPs** avoids or minimizes erosion by diverting stormwater around or within a project site. Water within the project can be carried so that it doesn't come in contact with the disturbed ground. Storm water management BMPs include:

- Contained silt control system (BMP-07.00)
- Temporary diversion conveyance (BMP-34.00 & 35.00)
- Slope drain (BMP-21.00 & 22.00)
- Interception ditch (BMP-11.00)

**Good Housekeeping BMPs** address the practice of keeping all materials, supplies and containers well organized, storing materials securely when not in use, and only having materials that are needed for the current work activity in the work area. They also prevent stormwater pollution from accidental releases. These BMPs include:

- Vehicle/Equipment storage, maintenance and fueling (BMP-42.00)
- Tire wash (BMP- 36.00 & 37.00)
- Sanitary waste management (BMP-41.00)
- Concrete washout (BMP-06.00)
- Street sweeping (BMP-55.00)

Some of the CGP required SWPPP elements are contained in the DOT&PF-required *Hazardous Material Control Plan* (HMCP). Incorporate the HMCP into the SWPPP as an appendix and reference it where appropriate. The HMCP Template is available online at:  
[http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml).

### **BMP Manual or Publication Citations**

Fully describe all selected BMPs in the SWPPP, including their purpose, applicability, limitations, design specifications, installation, maintenance requirements, and removal procedures. This information is typically provided in a BMP manual or other publication. Consider including the DOT&PF contract specifications and plan sheets or the manufacturer's specifications, though these resources do not always provide all the necessary information. Any missing information must be incorporated by the SWPPP Preparer.

Reference all manuals or publications used to select and design BMPs described in the SWPPP. Include the author's name, the title of the publication, the publisher, and the date of publication in the citation.

If no published source exists for a BMP designed for a project specific situation, then note in the SWPPP "No published BMP manual was used for this design."

A caution about BMPs from other State manuals: When reviewing BMP requirements and obligations, refer to the details and make sure the Department is not liable for items that do not apply to the Alaska CGP. If you alter the specification of a BMP, the SWPPP writer signs and dates the altered BMP. Guidance for citing BMP manuals and other BMP

publications is included in the DOT&PF SWPPP Template.

### **Release of Reportable Quantities of Oil or Hazardous Substances**

Because construction personnel may handle and store, use, and dispose of petroleum and certain hazardous substances related to construction activities and equipment, all spills must be reported in accordance with the CGP.

If a spill of oil reaches any surface waters or a hazardous substances spill exceeds the Reportable Quantity level, notify the project engineer and the DEC Spill Prevention and Response program as soon as the spill becomes known. Any release of a hazardous substance must be reported as soon as the person has knowledge of the discharge.

The following list delineates classifications of petroleum spills and the mechanism and timing of notification:

- **1 to 10 gallon spill:** A person in charge of a facility or operation shall maintain, and provide to DEC on a monthly basis, a written record of all releases of oil.
- **10 gallons but less than 55 gallon spill:** Any release of oil must be reported within 48 hours after the person has knowledge of the discharge.
- **A spill 55 gallons or more:** Any release of oil must be reported as soon as the person has knowledge of the discharge.

Refer to Appendix E in this guide for additional reporting requirements.

### **Non-Storm Water Discharges**

The CGP allows a limited number of non-stormwater discharges. Within the SWPPP identify any allowable sources of non-stormwater that will be combined with stormwater discharges from the construction activity. Don't include flows from fire-fighting activities.

The following examples are common non-stormwater discharges associated with construction activity. These discharges must meet water quality standards and cannot contain pollutants, such as petroleum.

- Water used to control dust,
- Potable water including uncontaminated water line flushing's,

- Water used to wash vehicles and equipment (no detergents are permitted),
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred and no detergents used),
- Water from uncontaminated excavation dewatering activities that are treated by an appropriate control measure, and
- Landscape irrigation

Identify and implement pollution prevention measures for the allowable non-stormwater discharges and eliminate or reduce them to the extent feasible. Describe prevention efforts for non-stormwater discharges barred by the CGP from release into U.S. waters.

### **Stormwater Discharges**

If there has been an incident of non-compliance with the CGP that may endanger health or the environment, immediately report the incident to the project engineer and follow the CGP, *Appendix A, Part 3.0*. Notify DEC within 24 hours after the permittee becomes aware of the circumstance. In addition, complete the DOT&PF Noncompliance Form 25D-143 within five days after the permittee becomes aware of the circumstance. Coordinate filing the written report with the project engineer. The report must include:

- A description of the noncompliance and its causes,
- The exact dates and times of noncompliance,
- The anticipated time the project will be brought back into compliance, and
- The corrective action taken or planned to reduce, eliminate and prevent reoccurrence.

The Contractor is responsible for their own reporting. The DOT&PF *Standard Specification 641-3.01.3* requires that the contractor coordinate to the extent possible reports with DOT&PF prior to submitting them to DEC. The best coordination would ensure DOT&PF and contractor reports use the same wording, time and date.

Notify the project engineer and COE Regulatory Program immediately if there is incident of non-compliance with a COE Permit.

## 2.2.4 Treatment Chemicals and Active Treatment Systems

The CGP allows for the use of treatment chemicals and Active Treatment Systems (ATS). Treatment chemicals use coagulation or flocculation to reduce erosion potential or can reduce sediment in stormwater discharges. An ATS utilizes a mechanical, or active, means for reducing turbidity caused by fine sediment, which could employ the use of treatment chemicals.

### Treatment Chemicals

If treatment chemicals are anticipated, list the types on the NOI. The NOI will need to be modified if this information was not listed previously.

When filling out the NOI, check “yes” in the Treatment Chemical section (VIII) if any product includes Polyacrylamide (PAM). The SWPPP must also provide the required documentation in accordance with the CGP.

Anyone handling the treatment chemicals must have an AK-CESCL certification, and it must be documented in the SWPPP.

Cationic polymers (with the exception of chitosan as part of an ATS) are prohibited, as is the application of treatment chemicals directly to waters of the U.S.

The selected treatment chemical must be appropriate for the site topography, soil types, amount of precipitation and type of use. This is confirmed either by testing the chemical with on-site soils or evaluating the product’s data for use on similar soils.

Apply treatment chemicals in conjunction with downstream physical control measures. When applied through the use of a manufactured product (e.g. gel bars, floc blocs, etc.), there must be at least 100 feet of ditch length downstream of the last manufactured product prior to reaching U.S. waters. Anyone handling the treatment chemicals must be AK-CESCL certified.

### Active Treatment Systems

If you anticipate using an ATS, submit the required documentation to DEC 14-days prior to its use. DEC submittal requirements are online at: [http://www.dec.state.ak.us/water/wnpssc/stormwater/sw\\_construction.htm](http://www.dec.state.ak.us/water/wnpssc/stormwater/sw_construction.htm).

The SWPPP must also include the required documentation in accordance with the CGP.

## 2.2.5 Permanent Storm Water Management Controls

The DOT&PF project design will include measures to control pollutants in storm water after construction is completed. Discuss these permanent controls in the SWPPP and describe how they will be protected during construction. Examples:

- Riprap
- Rock ditches
- Culverts
- Detention pond
- Infiltration measures
- Vegetated swales
- Natural depressions
- Vegetation on site

If the project is located in a Municipal Separate Storm Sewer System (MS4) consult with the MS4 operator. Operators of a regulated MS4 must comply with applicable design criteria for a variety of structural storm water management controls or Low Impact Development (LID) elements. A variety of stormwater controls and LID elements that are not discussed here may be applicable to site specific situations.

## 2.2.6 Winter Considerations

The CGP has provisions for winter shutdown, winter construction and winter clearing activities.

### Winter Shutdown

If winter shutdown is anticipated for a project, the project must be 100 percent stabilized before shutdown.

Document the anticipated dates of fall freeze-up and spring thaw in the SWPPP. Provide acceptable control measures prior to, during, and at the conclusion of winter shutdown to stabilize:

- conveyance channels,
- disturbed soils,
- slopes, and
- soil stockpiles.

Frozen ground by itself is not considered adequate stabilization.

Erosion and sediment controls must be capable of maintaining soil stability throughout the duration of spring thaw.

## Winter Construction

Winter construction activities must utilize control measures that will minimize erosion or sediment runoff during spring thaw. CGP coverage is unnecessary for constructing ice roads or placing sand or gravel on frozen tundra with no excavation or potential to pollute waters of the U.S.

## Winter Clearing

Cutting trees and brush on frozen ground must be done in accordance with the USFWS Migratory Bird Treaty Act. That act describes a “migratory bird window,” which is a period of time when birds are nesting. Clearing is not recommended without USFWS-authorized avoidance measures. The vegetative mat must be left undisturbed.

Use the DOT&PF environmental document as a source of information for DOT&PF-supplied areas to avoid any duplication of effort. In the case of contractor-supplied support areas or contractor expansion of DOT&PF supplied areas, notify the project engineer and consult with the USFWS.

If clearing is anticipated after spring thaw, or current temperatures are causing snow melt, then CGP coverage is required. A SWPPP must be developed and NOI must be filed prior to clearing.

### 2.2.7 Discharging to an Impaired Water

The CGP requires turbidity sampling for projects that disturb 20 acres or more at one time and discharge into a (Category 5 waterbody). Projects meeting these criteria must develop, implement, and modify a monitoring plan, as necessary. If a monitoring plan is required for a project, it will be provided by DOT&PF and must be included as part of the SWPPP.

The plan must be implemented by an AK-CESCL certified person “knowledgeable in the principles and practices of water quality monitoring.”

All monitoring data collected must be submitted to DEC in an annual report. If a discharge exceeding the water quality standard for turbidity is discovered, corrective action must be implemented within seven days of the date of discharge. A Corrective Action Report must be sent to DEC no later than 14 days after receiving the monitoring results.

### 2.2.8 Certification and Notification

The contractor and DOT&PF are “co-permittees” and each must receive coverage under the CGP. To receive coverage, each must submit an electronic NOI

form to DEC. For a copy of the form, complete instructions on filing and to file the NOI online, go to <http://www.dec.state.ak.us/water/wnpssc/stormwater/APDESeNOI.html>.

The eNOI form requires the following information:

1. Applicable permit number for which you are requesting coverage (the permit number is AKR100000).
2. Operator name, contact person, address, telephone number, and Employer Identification Number (EIN) as established by the Internal Revenue Service
3. Billing contact information
4. Project/site name, address, and latitude/longitude
5. Whether the SWPPP precedes the filing of the NOI (required by the permit), and location for viewing the applicable SWPPP
6. Name of the water(s) of the U.S. into which your site discharges (see NOI instructions for further explanation)
7. Whether the project discharges into a waterbody that is impaired or has a TMDL and if the discharge is consistent with the assumptions and requirements of applicable EPA approved or established TMDLs.
8. Estimated dates of commencement of construction activity and final stabilization (i.e., project start and completion dates)
9. Total acreage (to the nearest quarter acre) to be disturbed for which you are requesting coverage
10. The names of any polymer, flocculent or treatment chemical that will be used on the project
11. A certifying statement signed and dated by both a corporate officer including name and title (as defined by the Standard Permit Conditions of the CGP) and the DOT&PF regional director

DEC established the use of the eNOI to avoid the delay involved in mailed paper NOIs. A “myAlaska” account is needed to use the eNOI system.

The eNOI requires the same information as the standard NOI. Staff will prepare a hardcopy NOI for the certifying official’s use when submitting the eNOI. The appropriate corporate officer signs the hardcopy NOI and it is placed in the SWPPP.

DEC requires that only one of the co-permittees pay the required NOI fee. DOT&PF contracts require that the contractor pay the fee.

DOT&PF and the contractor should submit their NOIs as simultaneously as possible since construction activities cannot begin until DEC activates both NOIs. The CGP defines construction activities in terms of land disturbance. For example, mobilizing equipment may disturb land if moved over unstable soils, but would not disturb land if moved over paved areas. No land disturbance may occur prior to the acceptance of both NOIs, but non-land disturbing activities are still allowed.

The SWPPP must be certified by the DOT&PF and the contractor before submitting the NOI using Form 25D-109 for DOT&PF and Form 25D-111 for the contractor.

The DOT&PF Regional Director delegates signature authority to the position of project engineer (delegation to a position rather than an individual allows another person to sign in the case of changes of personnel during vacation or turnover) using Form 25D-107. The project engineer then certifies the SWPPP using Form 25D-109.

DOT&PF requires the contractor's corporate officer to delegate signature authority for SWPPP certification to the superintendent, using DOT&PF Form 25D-108. Either the contractor's corporate officer or the superintendent (only after being delegated) can certify the SWPPP using Form 25D-111. The contractor must also have each subcontractor read and certify the SWPPP using Form 25D-105 before they commence work at the project site.

The contractor compiles and retains the following records with the SWPPP:

1. SWPPP Certification Form, original copies, one for each operator DOT&PF Form 25D-109 and 25D-111
2. Delegation of Signature Authority, original copies, one for each operator DOT&PF Form 25D-107 and 25D-108
3. DOT&PF Form 25D-105 for each subcontractors

### Notice of Intent (NOI)

Include the signed and certified NOI forms that were submitted to DEC. Include both DOT&PF's and the contractor's NOIs. Also include a copy of the DEC email notifying you of both their receipt of the

administratively completed NOI and the date it becomes active.

### DEC and Local Requirements

If a project disturbs five acres or more of ground outside the area of a MS4 permitted municipality, submit both the DOT&PF- and contractor-certified SWPPP to DEC at the same time the NOI is filed.

Current MS4 permitted municipalities include Anchorage, Joint Base Elmendorf-Richardson, Port of Anchorage, Fairbanks North Star Borough, City of Fairbanks, and North Pole.

Use the address below:

Alaska Department of Environmental Conservation  
Wastewater Discharge Authorization Program  
Storm Water  
555 Cordova Street  
Anchorage, AK 99501

For projects within the MS4 that disturb one acre or more (or in some locations, 10,000 square feet or more), the SWPPP must be submitted to the appropriate MS4 entity *prior* to filing the NOI.

MS4 SWPPP review requirements vary by permit and municipality, so identify the requirements specific to the MS4 permit for that project location.

Local governments may have ordinances regarding stormwater. Your SWPPP should demonstrate compliance with applicable local requirements.

### Post a Notice

Post the following in a publicly accessible, noticeable location near the construction site's main entrance:

- APDES permit numbers and copies of the NOIs
- Name and phone number of contractor's local contact (if different from the NOI)
- Location of the SWPPP for viewing (if different from the NOI)

### 2.2.9 SWPPP Implementation

DOT&PF offers SWPPP Forms and Form Instructions to help the SWPPP Manager in maintaining the SWPPP and completing the forms. These are available electronically at:

[http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_consfoms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_consfoms.shtml)

The SWPPP Forms and Instructions are the best resource for ensuring a compliant SWPPP. The



information in this section is intended to provide some general background on SWPPP content.

### **SWPPP Modifications**

The contractor is responsible for amending or updating the SWPPP as conditions dictate (i.e., changes in design, construction, site conditions, or BMPs). For a construction activity to comply fully with the CGP, and for the SWPPP to be effective, the plan must accurately reflect current site features and operations.

Most SWPPP amendments require additional documentation attached to them. However, not all SWPPP updates require an amendment. The next two sections help differentiate the importance between when a SWPPP amendment is needed.

### **SWPPP Amendments**

A SWPPP amendment is necessary if there are any changes in the construction or if the previous plan is ineffective in controlling pollutants. The CGP requires an amendment to be added to the SWPPP within seven days from the day a problem is identified.

The following actions are a few examples that require a SWPPP amendment:

- Addition of a structural BMP not shown on the original SWPPP.
- Deletion of a structural BMP that is shown on the original SWPPP.
- Addition of different manufactured BMP.
- Change in named personnel (SWPPP Manager, Superintendent).
- Change in inspection frequency.
- Addition of support facility site.

Amendments may be done by adding new pages of text or drawings, or by markups in the margins of text or on the plan sheets.

Amendments are dated, initialed, easy-to-read, approved by an AK-CESCL (or equivalently) certified individual, and listed in the SWPPP Amendment Log DOT&PF Form 25D-114.

Only the contractor's Superintendent and SWPPP manager may amend the SWPPP per *Standard Specification 641-3.03*. Both must have a current AK-CESCL certification. Only the DOT&PF project engineer can approve amendments. To signify approval of a SWPPP Amendment, the AK-CESCL can sign the Amendment Log and date and initial the

actual page the amendment is on. The signature must be the full name of the approving individual. The certification number and expiration date of the approving individual must also be included on the amendment log.

### **SWPPP Updates**

Updates simply record actions that were planned for in the SWPPP. They include dates of installation, removal, or regular maintenance of BMPs that occur as per the SWPPP.

These notes are typically hand-written on the plan sheets, with each entry dated and signed or initialed.

When a plan sheet becomes too full to be read easily, fold and date it, transfer the current conditions to a new sheet and continue to document amendments and updates to the new sheet. Place the new page after the old page in the SWPPP binder.

In addition, the permit and DOT&PF contract require continually recording updates on logs, such as the rainfall, grading and stabilization activities and corrective actions.

### **Plan Location and Availability**

You must keep a copy of the SWPPP at the construction site from the time construction begins until final stabilization is achieved. The permit allows the SWPPP to be kept off-site during winter shutdown provided the NOI posting sign contains the winter location.

The SWPPP must be made available upon request by DEC, EPA, or other agencies as identified in the permit. If DEC requests information related to the CGP, the information must be provided to them within 30 days. The contractor's copy is the project's active SWPPP of Record.

### **Inspections**

Identify the personnel responsible for these inspections and describe their qualifications. The permit requires all inspectors to be qualified in the following; erosion and sediment control and storm water quality protection. For DOT&PF projects, inspectors meet both requirements if they are current in one of the following certifications: Alaska Certified Erosion and Sediment Control Lead (AK-CESCL), Certified Professional in Erosion and Sediment Control (CPESC) and Certified Inspector of Sediment and Erosion Control (CISEC).

Place copies of the certifications in the appropriate appendix of the SWPPP.

Describe the plan and frequency for inspection of the project in accordance with the CGP and contract. If the site is eligible for reduced inspection frequency indicate why it is eligible and provide the beginning and end dates. When changing from the regular inspection frequency to a reduced inspection frequency, or waiving inspections during winter shutdown, amend the SWPPP before the next regular inspection before conducting inspections on the new schedule.

Be sure the scope of the inspection is thorough enough to meet the CGP requirements. Inspections must include:

- all project areas disturbed by construction activities,
- observation of all of the discharge points (where collected and concentrated storm water exits the project, such as a drain inlet, ditch, stream, gully, swale, etc.),
- all of the installed control measures BMPs,
- areas where temporary stabilization measures have been placed,
- areas where permanent stabilization measures have been initiated but not yet reached “final stabilization,”
- locations where vehicles enter and exit,
- locations where vehicles are stored, fueled or maintained to check for leaks or spills, and
- locations where materials are stored and exposed to precipitation.

Use Inspection Report Form 25D-100 and follow the Inspection Report Form Instructions to ensure it meets CGP and DOT&PF requirements.

### **Joint Inspections**

SWPPP inspections must be conducted jointly by the SWPPP Manager or Superintendent titles and the Departments Stormwater Inspector per *Standard Specification Section 641-2.04 and 641-3.03*, unless approved by the engineer.

If the current SWPPP Manager is unavailable for an inspection, then an alternative SWPPP Manager may be assigned during the time of absence through a SWPPP amendment. Similarly, DOT&PF may have someone fill in for an absent stormwater inspector.

For the above paragraph, “engineer approval” means when both inspectors must fly to a remote area in the winter, or when one inspector is sick, or unable to travel to the site due to weather, or when the project

engineer determines a safety concern which makes the joint inspection impracticable. A memo explaining the situation is amended to the SWPPP. The operator who conducts the inspection must provide a copy of the Inspection Report to the other operator within three days of the inspection date and document the date of the report transmittal.

Inspection reports are certified by the project engineer and the superintendent, both with a current AK-CESCL certification or its equivalent.

### **Corrective Actions**

Corrective action is required when an inspection reveals a problem such as the need for a new BMP, the need to fix a BMP, a BMP being overdue for maintenance, a leak needs to be fixed and cleaned up, or a noncompliance with the CGP.

Corrective actions identified through the inspection must be described in the inspection report form, including the date by which the corrective action must be completed. This date must conform to CGP and contract requirements.

If control measures are not working effectively and water quality is threatened, take immediate action.

Each action item must be transferred to the Corrective Action Log (Form 25D-112), which documents the cause of the corrective action, the response, and date completed.

Corrective actions found outside of an inspection must also be documented in the Corrective Action Log and need to be corrected within the corrective action deadlines per the CGP *Section 8.2 and Standard Specification Section 641-3.01.4*. The Corrective Action Log provides a means to distinguish these corrective actions from those identified during an inspection.

### **Regular Maintenance**

Describe the procedures to regularly maintain temporary soil stabilization measures, existing vegetation, erosion and sediment control measures, and other protective measures.

Such practices may include removing sediment from structural controls (such as sediment ponds/traps, silt fences, or check dams), reinforcing and repairing silt fences or wattles, or reseeding areas as needed.

For sediment control BMPs such as inlets, check dams, berms, or other control measures the CGP requires maintenance before sediment accumulates to

more than one-half the distance up the above-ground height.

The CGP requires maintenance for silt fence when accumulations reach one-third the distance of the above-ground height for silt fence.

For sediment traps or sediment ponds, the CGP requires the removal of sediment when the design capacity has been reduced by fifty percent.

Maintenance procedures for other BMPs should be described in the SWPPP and may be specified in the contract.

Describe in the SWPPP winter shutdown maintenance procedures to ensure all control measures will remain functional during that time. It is particularly important for the control measures to be effective at the time of spring thaw.

The SWPPP documents regular maintenance including the date the maintenance need was discovered, the date the maintenance occurred, and the date the control measure returned to full function. The documentation should be specified on site maps and the corrective action log.

### **Recordkeeping**

Include in the SWPPP a copy of the CGP that is current at the time the NOI is filed.

Also keep all the forms that are included in Appendix A of this Guide in the SWPPP. Keep the forms up-to-date, preferably a daily basis, but at least on a weekly basis.

Other records to keep with the SWPPP include:

- A copy of the signed NOI from every permittee (usually the contractor and the DOT&PF, but there may be others).
- Copies of the DEC acknowledgement of receipt of each NOI.
- Correspondence related to storm water with regulatory authorities.
- Records of non-storm water discharges.
- Documentation of the SWPPP preparer's stormwater inspector's, Superintendent's and Project Engineer's erosion and sediment control certification(s). Be careful to update these records anytime there is either personnel turnover or someone goes on leave and is temporarily replaced. In the latter case, include in the SWPPP a memo that delegates

the position responsibilities and gives the dates.

- Copy of the DOT&PF Letter of Non-Objection from DEC regarding the permanent storm water management (when it is required).

SWPPP Records are legal documents and need to be prepared and kept with care.

Do not white-out mistakes on any SWPPP records (including inspections and logs). Simply cross-out the erroneous information, provide the correct information, and date and initial the correction.

For Inspection Reports, consult the 25D-100 Inspection Report Instructions for special guidance on all SWPPP site inspection related items.

### **Regulatory Inspection**

When a regulatory inspector (local government, DEC, or EPA) visits a site, the contractor's SWPPP is the SWPPP of Record.

Based on the reason for the inspection (routine or compliance), the permittee may or may not be contacted ahead of time to schedule the inspection. Do the following for these inspections:

- Relax, be courteous, professional and comply with all inquiries and requests for information.
- Notify the project engineer as soon as possible when a regulatory inspector contacts you or arrives on site.
- Request a business card or ask to see the inspector's credentials.
- During the inspection take your own photos/notes of items the inspector points out.
- Document all items mentioned and photographs.
- Ask for the exit meeting to review site visit and document everything.

### **Retention of Records**

Retain the following SWPPP documents for three years after filing the NOT:

1. A copy of the SWPPP, including any modifications made.
2. Inspection records detailing dates of earth-disturbing activities, BMP corrective action dates, the end of construction, and stabilization dates.
3. A copy of all monitoring information and reports (if applicable).

4. A copy of the NOI and NOT.
5. Any other reports and certifications required by the CGP.

### **2.2.10 Contractor and Subcontractor**

The SWPPP describes the roles and responsibilities of the various entities that are active at a project.

Identify the personnel of the prime contractor (and subcontractor, if applicable) responsible for implementing the SWPPP. List all contractors (prime or sub) who perform earth-disturbing activities or install and maintain erosion and sediment control measures.

If applicable, include a description of the utility company's role and responsibilities. If they have their own SWPPP, just reference that document in your SWPPP.

If the contractor has provided support activities, such as disposal or material sites that are covered in a separate SWPPP, then the project SWPPP must reference the other SWPPP plans.

### **2.2.11 Final Stabilization and Permit Termination**

The SWPPP remains in effect until construction activities are done and stabilization of disturbed areas prevent further erosion. Final stabilization means all earth-disturbing activities at the project site are complete and all disturbed land is stabilized through mechanical or vegetative means.

Mechanical stabilization includes:

- Paving
- Riprap
- Retaining structures
- Clean gravel
- Any naturally non-erodible surfaces such as bedrock and porous parent material

Vegetative stabilization means planting a uniform perennial vegetative cover with a density of 70 percent of the native background cover within the total disturbed area. In arid and semi-arid areas, temporary erosion control measures (e.g. degradable rolled erosion control product) should be used to provide erosion control for at least three years without active maintenance. A 70 percent vegetative cover needs to be established within those three years.

When background cover is less than 100 percent (e.g.: beaches or arid areas), the stabilization requirement is adjusted (see the Definitions in the CGP).

The project engineer will verify final stabilization, even if less than one acre remains in the disturbed area. An operator cannot file for termination of permit coverage until there is stabilization for all disturbed areas and all temporary BMPs are removed.

If the contractor or subcontractor's responsibility for final stabilization is complete or another subcontractor or DOT&PF has assumed responsibility for all areas of the site for final stabilization, the contractor may submit an electronic Notice of Termination (eNOT) to DEC. The NOT must be submitted within 30 days of the project engineer confirming final stabilization.

The NOT must include:

1. The APDES tracking number.
2. The basis for submitting the NOT (i.e. completed final stabilization or permittee no longer has responsibility over the site).
3. Your name, address, telephone number, and organization Employer Identification Number (EIN).
4. Name of project, address, and location.
5. A certification statement signed and dated by the corporate officer.

Submit NOTs to DEC in the same manner as the NOI (see 2.2.5). Provide a paper copy of the NOT to project engineer. For a stabilized project, the DOT&PF Regional Director submits an NOT, terminating the Department's coverage under the CGP.

Provide a complete and true copy of the contractor's SWPPP and all associated records to DOT&PF when the NOTs are officially terminated by DEC.

# Appendix A

Alaska DOT&PF SWPPP Guide

## Appendix A. Alaska DOT&PF SWPPP Template and Checklist

### General Instructions

The Alaska Department of Transportation and Public Facilities (DOT&PF) has developed its own SWPPP template to assist you in writing a SWPPP that is consistent with the Alaska Department of Environmental Conservation (DEC) SWPPP template and the DOT&PF contract specifications. Other SWPPP development resources are available, such as:

1. DOT&PF *Alaska SWPPP Guide*, which is available on the DOT&PF Storm Water website at: <http://www.dot.state.ak.us/stwddes/desenviron/resources/stormwater.shtml>
2. DOT&PF SWPPP Review Checklist, which is available at: [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml)
3. The *Alaska Storm Water Guide*, available on the DEC's website at: <http://dec.alaska.gov/water/wnpssc/stormwater/docs/AKSWGGuide.pdf>.
4. The U.S. Environmental Protection Agency (EPA) guidance *Developing Your Stormwater Pollution Prevention Plan*, available on EPA's website at: [http://www3.epa.gov/npdes/pubs/sw\\_swppp\\_guide.pdf](http://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf)
5. EPA's *National Menu of Stormwater Best Management Practices*, available at: <http://www.epa.gov/sites/production/files/2014-04/documents/stormwater-best-management-practices.pdf>

### *Using the DEC SWPPP Template*

The DOT&PF SWPPP template uses the DEC template, but with some required modifications, described in the Specific Instructions below. The DEC SWPPP template is available at <http://dec.alaska.gov/water/wnpssc/stormwater/Index.htm>. Please use the current version available on DEC's website. Then incorporate the DOT&PF modifications, which are outlined in the order they appear in the DEC SWPPP template.

### Specific Instructions

#### **Cover Page**

Include both the Contractor's and DOT&PF's permit tracking numbers once they are available (and any other tracking numbers if there are additional Operators).

#### **Record of SWPPP Amendments**

Delete this page. DOT&PF has developed a form for SWPPP Amendments to include in the Appendices.

## **Operator Plan Authorization/Certification/Delegation**

Delete this page. DOT&PF has developed forms for certifying the SWPPP and delegating signatory authority to include in the SWPPP as later described.

## **Table of Contents, Appendices**

Revise the list of Appendices as follows:

- A Site Maps and Drawings
- B BMP Details
- C Project Schedule
- D Supporting Documentation
  - TMDLs
  - Endangered Species
  - Applicable Federal, State, Tribal, Historical, or Local Requirements
  - DEC Non-Domestic Wastewater Plan Review No Objection Letter (if required)
  - DEC Dewatering Permit (if required)
  - Environmental Permits and Commitments
- E Delegation of Authority\*, Subcontractor Certifications\*, Project Staff Tracking\* and Personnel Qualifications
- F Permit Conditions
  - Copies of Signed Notices of Intent
  - Confirmations of Delivery of NOIs to DEC
  - Copies of Letters from DEC Authorizing Coverage, with DEC NOI Tracking Numbers
  - Copy of 2016 Alaska Construction General Permit
- G Grading and Stabilization Records\*
- H Monitoring Plan (If Applicable) and Reports
- I Training Records\*
- J Corrective Action Log\* and Delayed Action Item Reports\*
- K Inspection Records\*
- L SWPPP Preparer's Site Visit\*
- M SWPPP Amendment Log\*
- N Daily Record of Rainfall\*
- O Hazardous Materials Control Plan
- P Treatment Chemical/Active Treatment Systems (If Applicable)
- Q Other
  - Anti-Degradation Analysis (If Applicable)
  - Correspondence with Regulatory Agencies
  - Notices of Termination

Note that appendices with an asterisk (\*) are for required DOT&PF forms. These forms are located at [http://www.dot.state.ak.us/stwddes/dsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dsconst/pop_constforms.shtml) and must be included in the appropriate SWPPP appendix.

## SECTION 1 – GENERAL INFORMATION

### 1.0: Permittee Operator(s)/ Contractor(s) and Subcontractors

### 2.0: Storm Water Contacts

Identify the individuals in the following positions:

Storm Water Lead (SWPPP Manager)

Person(s) Updating the SWPPP (Contractor's Superintendent and/or SWPPP Manager)

Persons Conducting Inspections (Contractor's SWPPP Manager and DOT&PF's Storm Water Inspector)

Persons Signing Inspection Reports (Contractor's Superintendent and/or DOT&PF Project Engineer)

Person Conducting Monitoring (if applicable)

Person Operating Active Treatment System (if applicable)

### 3.0 Project Information

### 3.2: Project Site Specific Conditions

In addition to the information in the DEC template, include the size (in inches) of the 2-year, 24-hour storm for the site in this section. If there is a NWS station in the immediate vicinity of the project that is to substitute for a rain gauge in accordance with the 641 spec, then identify the station in this section. To determine the 2-year, 24-hour storm, use the best available information and/or NOAA Atlas 14 available at:

[http://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_ak.html](http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_ak.html)

Resources helpful for completing this section include:

- Soils: soil information may be found on the Natural Resources Conservation Service website: <http://www.ak.nrcs.usda.gov/soils/index.html>.
- Growing Season: Information on the growing season can be found in the Alaska Regional Supplement to the Corps of Engineers Wetland Delineation Manual at <http://www.poa.usace.army.mil/reg/Jurisdiction/Alaska%20Regional%20Supplement.pdf>
- Freeze/Thaw Dates: The anticipated dates of fall freeze-up and spring thaw can be found at <http://www.wrcc.dri.edu/summary/Climsmak.html>

### 4.0: Nature of the Construction Activity

### 5.0 Site Maps



## 6.0 Discharges

### 6.1 Locations of Other Industrial Storm Water Discharges

If the DOT&PF is not a CGP operator for the site or sites listed in this subsection, then describe the sites and BMPs for them in a separate SWPPP2. In this section, explain which areas are covered within this SWPPP and which are covered within a separate SWPPP2. Also provide information on where the SWPPP2 is available for review.

## 7.0 Documentation of Permit Eligibility Related to Total Maximum Daily Loads

### 7.1: Identify Receiving Waters

In addition to the information in the DEC template, provide the Alaska Department of Fish and Game (DF&G) Anadromous Waters catalog number for receiving water bodies that are listed in the DF&G Anadromous Waters Catalog. The catalog is found at: <http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?adfg=maps.interactive>. DOT&PF may also provide consultation documentation regarding anadromous waters.

### 7.2: Identify TMDLs

DEC's instructions ask that all impaired water body categories be looked at, but not all impaired water bodies have TMDLs. Therefore, please also answer this question:

Are there impaired receiving waters listed in Section 7.1 without an approved TMDL?

Yes       No

### 8.0: Documentation of Permit Eligibility Related to Endangered Species

Use the DOT&PF consultation documentation for this section.

### 9.0: Applicable Federal, State, Historic, Tribal, or local Requirements

Use the DOT&PF documentation for this section.

## 10.0: CONTROL MEASURES/BEST MANAGEMENT PRACTICES

Use the format below and instructions for listing BMPs in Section 10.0 Control Measures/Best Management Practices:

---

***BMP Description:***

Describe purpose, applicability, limitations and design. If using a BMP manual or publication, this information may be found there.

---

***BMP Manual/Publication:***

Provide the citation information as described below. If referencing Appendix B, where the BMP details are

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provided, ensure the attached sheets clearly identify this information.

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***Installation Schedule:***

Identify the activity or phase prior to which the BMP will be installed or the activity that requires this BMP to be installed before it can begin.

---

***Maintenance and Inspection:***

Describe the thresholds and/or indicators for maintenance and protocols for inspecting the BMP. Describe the maintenance procedures. If using a BMP manual or publication, this information may be found there.

---

***Responsible Staff:***

Name the position and company who is responsible for installation and maintenance.

---

**How to Cite a BMP Publication:**

For all temporary control measures, including Good Housekeeping BMPs, identified in this section, DOT&PF requires citation for the BMP manual or publication used to select and design the BMP. If the BMP was designed specifically for the project and a manual or publication was not used, include the statement “No manual was used to select or design the BMP” and include information on the BMP’s design and placement in the SWPPP.

Permanent BMPs do not need a citation. Permanent, or Post-Construction, BMPs are permanent features that have been included in the DOT&PF contract.

- 1) *BMP Manuals:* BMP manuals describe each BMP and outline details such as installation, design parameters, applicability/limitations, maintenance, and targeted pollutants. To cite a manual, include the title, author (individual or agency) and date of publication, and include the appropriate BMP manual pages in Appendix B of the SWPPP.
  
- 2) *DOT&PF Specifications and Plan Sheets:* The publication cited may be the DOT&PF contract specifications and plan sheets provided that the minimum information regarding the BMP is included, which is:
  - BMP description and drawing, as appropriate; the description should include information such as: Purpose, Applicability, and Limitations
  - Design specifications
  - Installation detail
  - Maintenance and inspection requirements
  - Removal

When the plans and specifications are used, the reference must include the sheet or page number and these must be appended to the SWPPP. If the specifications and plan sheets do not provide the minimum information, the SWPPP Preparer must provide the missing information in the SWPPP. Any drawing or description

developed by the SWPPP Preparer must include the statement “No BMP manual or publication was used for this design.”

- 3) *Manufacturer’s Specification Sheet*: Referencing a Manufacturer’s specification sheet is suitable **only** if it includes all the necessary information listed in the above subsection. When using the manufacturer’s specification sheet(s), provide the product name, manufacturer, and date of copyright, and attach copies of the specification sheet(s) to the SWPPP. It may also be helpful to provide the manufacturer’s website if the information was obtained online.

## **10.9 Soil Stockpiles**

## **10.10 Sediment Basins**

### **10.11 Dewatering**

Use the DEC AKG002000 – Excavation Dewatering General Permit. The dewatering of accumulated groundwater and storm water that accumulates within an excavation area is an authorized discharge under the permit. The permit does provide discharge authorization for dewatering conducted within 1,500 feet of a permit defined “DEC-identified contaminated site” although special permit conditions apply and additional requirements may be added in the discharge authorization.

### **10.12 Soil Stabilization**

Does the SWPPP outline the general sequence of the stabilization practices that will be used to achieve temporary and permanent stabilization?

### **10.13: Treatment Chemicals**

In addition to providing all the information in the DEC template, attach required documentation outlined in the 2016 CGP Part 4.6.1 for the selected chemical(s) in Appendix Q. To document the training for employees using treatment chemicals, use Appendix E or use Appendix I (training log) for additional documentation of training specific to treatment chemical use.

### **10.14: Active Treatment System Information**

For this section, simply include the packet submitted to DEC in Appendix Q, and refer to this documentation.

### **10.15.2: Fueling and Maintenance Areas**

HMCP or SPCC: For the specific sections in the Good Housekeeping BMPs that deal with fueling and oiling, equipment care and maintenance, waste materials, etc. It should be mention, by referencing the specific page and section, this requirement for BMP reference and citation is met. Also, it will/can create less conflict within the SWPPP due to the HMCP being project specific and the BMP citations more generic.

### **10.16: Spill Notification**

Does the SWPPP describe spill prevention and response measures or reference an HMCP/SPCC that is provided in the SWPPP?

### **10.18: Permanent/Post-Construction BMPs**

Add this section to the DEC Template to identify any permanent/post-construction control measures that will be installed during the construction process *and* not discussed elsewhere in the SWPPP (permanent Soil Stabilization measures should be covered in section 11.12).

Examples of Permanent/Post-Construction BMPs include the following:

- Biofilters
- Detention/Retention Devices
- Earth Dikes, Drainage Swales and Lined Ditches
- Infiltration Basins
- Vegetated Strips and/or Swales

### **11.0: Inspections**

DOT&PF requires Contractors to use the Inspection Report (Form 25D-100) for conducting inspections and the Corrective Action Log (Form 25D-112) to document completion of corrective actions instead of those provided as samples in the DEC template. Attach these DOT&PF forms to the SWPPP in Appendices K and J, respectively.

### **12.0: Monitoring Plan**

Complete section 12.1. Answer the question “Is the disturbed acreage equal to or greater than 20 acres?” for the area being disturbed that discharge to the impaired water. If yes, develop a phasing plan to limit the acreage that is disturbed at one time. If monitoring is not required, delete sections 12.2 and 12.3. If monitoring is required, DOT&PF will have developed a monitoring plan that can be used to complete the information in this section. In addition, attach the monitoring plan to the SWPPP in Appendix H.

### **13.0: Post Authorization Records**

#### **13.1: Records of Employee Training**

DOT&PF requires records of training to be documented on the Training Log (Form 25D-125). Attach this form to the SWPPP in Appendix I.

### **14.0: Maintaining an updated SWPPP**

#### **14.1: Log of SWPPP Modifications**

DOT&PF requires SWPPP modifications to be documented on the SWPPP Amendment Log (Form 25D-114). Attach this Log to the SWPPP in Appendix M.

### **15.0: Additional Documentation Requirements**

DOT&PF requires the dates when grading activities temporarily or permanently cease and dates when stabilization measures are initiated be recorded on the Grading and Stabilization Log (Form 25D-110). Attach the Log to the SWPPP in Appendix G.

### **15.4: Signature and Certification**

As co-permittees, the SWPPP is signed and certified by both the Contractor and by DOT&PF. DOT&PF requires the use of its forms, instead of those provided as examples in the DEC template. The Contractor must complete the SWPPP Contractor Certification (Form 25D-111) once DOT&PF approves the SWPPP and attach it in Section 15.4. Either the Contractor's corporate officer or their duly authorized representative can certify the SWPPP. If a duly authorized representative certifies, the Delegation of Signature Authority form must be included in Appendix E. All SWPPP forms are located at [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml).

Upon approval, DOT&PF will provide the Contractor with signed DOT&PF forms for the DOT&PF SWPPP Certification (Form 25D-109) and DOT&PF Delegation of Authority (Form 25D-107) for inclusion in the SWPPP.

Place Subcontractors Certifications in Appendix E.

## **APPENDICES**

The following is the full list of required Appendices. All DOT&PF SWPPP forms are located at [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml). Some Appendices will require the SWPPP Preparer and/or SWPPP Manager to include the appropriate attachments at a later time.

**APPENDIX A** – Site Maps and Drawings

**APPENDIX B** – BMP Details

**APPENDIX C** – Project Schedule

Appendix D – Supporting Documentation

- TMDLs
- Endangered Species
- Historic Properties
- DEC Non-domestic wastewater plan review no objection letter (if required)

- DEC Dewatering Permit (if required)
- Environmental permits and commitments

**Appendix E – Delegation of Authority, Subcontractor Certifications, Project Staff Tracking & Personnel Qualifications**

- Contractor Delegation of Authority (Form 25D-108)\
- DOT&PF Delegation of Authority (Form 25D-107)
- SWPPP Subcontractor Certification (Form 25D-105)
- Project Staff Tracking (Form 25D-127)

**APPENDIX F – Permit Conditions**

- Copies of Signed Notices of Intent
- Confirmation s of Delivery of NOIs to DEC
- Copies of Letters from DEC Authorizing Coverage with DEC NOI Tracking Numbers
- Copy of 2016 Alaska Construction General Permit

**APPENDIX G – Grading and Stabilization Records**

- Grading and Stabilization Log (Form 25D-110)

**APPENDIX H – Monitoring Plan (If Applicable) and Reports**

**APPENDIX I – Training Records**

- Training Log (Form 25D-125)

**APPENDIX J – Corrective Action Log and Delayed Action Item Reports**

- Corrective Action Log (Form 25D-112)
- Delayed Action Item Report (Form 25D-113) – to be completed by DOT&PF as needed

**APPENDIX K – Inspection Records**

- Inspection Report (Form 25D-100)

**APPENDIX L – SWPPP Preparer’s Site Visit**

- Pre-Construction Site Visit (Form 25D-106)

**APPENDIX M – SWPPP Amendment Log**

- SWPPP Amendment Log (Form 25D-114)

**APPENDIX N – Daily Record of Rainfall**

- Daily Record of Rainfall (Form 25D-115)

**APPENDIX O – Hazardous materials Control Plan**

**APPENDIX P – Treatment Chemical/Active Treatment Systems (If Applicable)**

## APPENDIX Q – Other

- Anti-Degradation Analysis (If Applicable)
- Correspondence with Regulatory Agencies
- Notices of Termination



State of Alaska Department of Transportation & Public Facilities  
Statewide Design & Engineering Services

**STORM WATER POLLUTION PREVENTION PLAN REVIEW CHECKLIST**

Project Name:  
 Project Number:  
 Date SWPPP Submitted to DOT&PF:  
 Date of Review:  
 Reviewer:  
 SWPPP Approved?  No  Yes

*Use this checklist when reviewing a Storm Water Pollution Prevention Plan (SWPPP) that has been submitted by a contractor. The purpose of this checklist is to ensure that the SWPPP includes the Alaska Department of Environmental Conservation (ADEC) 2016 CGP and the February 2016 DOT&PF specification requirements. This checklist follows the topic order of the ADEC SWPPP template, version 1.0.*

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>1.0 PERMITTEE</b>					
1	Does the SWPPP identify the Contractor and DOT&PF as co-operators/permittees at the site, and the areas over which each has control?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.1 DOT&PF Spec 641- 1.06 & 2.01
2	Does the SWPPP identify any subcontractors and areas where subcontractors are conducting activities?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.1
3	Does the SWPPP state which operator/permittee is responsible for the implementation of the SWPPP?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		DOT&PF Spec 641-1.06 & 2.01
4	Does the SWPPP show the lines of authority and contact information for the Superintendent, SWPPP Manager, and Subcontractor and Utility SWPPP Coordinators?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		DOT&PF Spec 641- 2.01



Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>2.0 STORM WATER CONTACTS</b>					
5	Does the SWPPP identify the qualified person(s) that have the following responsibilities: <ul style="list-style-type: none"> <li>• SWPPP Manager/ Storm Water Lead</li> <li>• Updating the SWPPP</li> <li>• Conducting Inspections</li> <li>• Conducting Monitoring*</li> <li>• Operating an Active Treatment System*</li> </ul> *If applicable		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.2 DOT&PF Spec 641- 1.04, 2.01 & 2.04
6	Is the name of the SWPPP Preparer(s) provided?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 1.2.3 DOT&PF Spec 641- 2.01
7	Do the persons listed for positions in this section meet the definition of “qualified person” for their named position/role?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.2, 5.1.2.3 & Appendix C DOT&PF Spec 641- 1.04 & 2.01
8	Are these individuals, their positions, and their qualifications documented in Appendix E?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.2, 5.1.2.3 & DOT&PF Spec 641- 2.01
<b>3.0 PROJECT INFORMATION</b>					
<b>3.1 Project Information</b>					
9	Does the SWPPP provide the project location?		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP 2.2.3.3 SWPPP Template
10	Does the SWPPP provide the project latitude and longitude?		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP 2.2.3.3 SWPPP Template
<b>3.2 Project Site-Specific Conditions</b>					
11	Does the SWPPP describe the soils, topography, drainage patterns, approximate growing season and vegetation?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.3.2

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
12	Does the SWPPP identify the mean annual precipitation?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.3.1 DOT&PF Spec 641- 2.01
13	Does the SWPPP specify the size (in inches) of the 2-year, 24-hour storm?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		
<b>4.0 NATURE OF CONSTRUCTION ACTIVITY</b>					
14	Does the SWPPP describe the function of the project?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.4.1
15	Is the intended sequence of construction activities that disturb soils described?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.4.2 DOT&PF Spec 641- 2.01
16	Is the size of the property and total area (in acres) expected to be disturbed within the Project Zone provided (including excavation, grading and support activities such as off-site staging, borrow, and waste areas)?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.4.3
17	Does the SWPPP identify all potential sources of pollution that may reasonably be expected to affect the water quality of the storm water discharges from the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.4.5
<b>5.0 SITE MAPS (APPENDIX A)</b>					
18	Does App. A include a general location of the site with enough detail to identify the location of the construction site and any waters of the U.S. (including wetlands) within one mile of the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.4.4 and 5.3.5

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
19	<p>Does App. A include site maps containing all the following information?</p> <p><input type="checkbox"/> Boundaries of the property where construction activities will occur;</p> <p><input type="checkbox"/> Locations where earth disturbing activities will occur, noting any phasing;</p> <p><input type="checkbox"/> Location of areas that will not be disturbed;</p> <p><input type="checkbox"/> Location of storm water conveyances including ditches, pipes, and swales;</p> <p><input type="checkbox"/> Location of storm water inlets and outfalls, with a unique identification code for each outfall;</p> <p><input type="checkbox"/> Municipal separate storm sewer systems, if present;</p> <p><input type="checkbox"/> Direction(s) of storm water flow and approximate slopes after grading activities</p> <p><input type="checkbox"/> Locations where control measures will be or have been installed</p> <p><input type="checkbox"/> Locations where exposed soils will be or have been stabilized</p> <p><input type="checkbox"/> Locations where post construction (permanent) storm water controls will be or have been installed</p> <p><input type="checkbox"/> Locations of support activities: concrete/ asphalt batch plants, equipment staging areas, material storage areas, disposal areas, borrow areas</p> <p><input type="checkbox"/> Locations where</p>		<p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes, but deficient</p> <p><input type="checkbox"/> Yes</p>		2016 CGP: 5.3.5

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
	<p>authorized non-storm water will be used including the type</p> <p><input type="checkbox"/> Locations and sources of run-on to the site from adjacent property that may contain qualities of pollutants (e.g., sediment, fertilizers, and or pesticides, paints, solvents, fuels) which could be exposed to rainfall, or snowmelt, and could be discharged from the construction site.</p> <p><input type="checkbox"/> Locations of all waters of the U.S. on the site as well as those within 2,500 feet of the site boundary that may be affected</p> <p><input type="checkbox"/> Locations of existing public water system (PWS) drinking water protection areas (DWPA) for PWS sources (e.g., springs, wells, or surface water intakes) that intersect the boundary of the proposed project/permit area</p> <p><input type="checkbox"/> Locations where storm water and/or authorized non-storm water discharges to waters of the U.S. or an MS4</p> <p><input type="checkbox"/> Locations of Sampling Points (if applicable)</p> <p><input type="checkbox"/> Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.</p>				
Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>6.0 DISCHARGES</b>					
20	Does the project include other industrial storm water discharges? (note: if there are no dedicated asphalt/concrete plants, the SWPPP must state this) CGP 1.4.2.3. <input type="checkbox"/> No; <i>If no, skip to Item 21.</i> <input type="checkbox"/> Yes: <input type="checkbox"/> asphalt plant, <input type="checkbox"/> concrete plant; <i>If yes, address 20a.</i>				
20a	Does the SWPPP describe and identify the location of discharges associated with support activities?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.8 DOT&PF Spec 641- 2.01
21	Does the project include authorized non-storm water discharges? (note: if there are none, the SWPPP must state this) <input type="checkbox"/> No; <i>If no, skip to Item 22.</i> <input type="checkbox"/> Yes; <i>If yes, address Items 21a – b.</i>				
21a	Does the SWPPP identify all sources of non-storm water discharges associated with the site, and are these consistent with the list in the CGP?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 1.4.3 & 5.3.9
21b	Does the SWPPP discuss how non-storm water discharges will be minimized or controlled?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.3.7 and 5.3.9

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>7.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO TOTAL MAXIMUM DAILY LOADS</b>					
<b>7.1 Identify Receiving Waters</b>					
22	Does the SWPPP list all the water bodies that would receive storm water from the site including wetlands, impaired waterbodies, anadromous waters, and water bodies that sewer/drainage systems drain to?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.3.3.3
23	Does the project affect an impaired water body? <input type="checkbox"/> No; <i>If no, skip to Item 25.</i> <input type="checkbox"/> Yes; <i>If yes, address 23a - 24.</i>				
23a	Does the SWPPP indicate the location of discharges into impaired water bodies?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>7.2 Identify TMDLs</b>					
24	Does the project affect an impaired water body with an approved or established total maximum daily load (TMDL)? <input type="checkbox"/> No; <i>If no, skip to Item 25.</i> <input type="checkbox"/> Yes; <i>If yes, address Items 24a – d.</i>				
24a	Are the TMDLs identified?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.6
24b	Does the SWPPP state whether the discharge is identified in the TMDL or whether there are allocations, requirements or assumptions identified for the discharge?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.6
24c	Does the SWPPP summarize consultation with state or federal TMDL authorities on the consistency of SWPPP conditions with the approved TMDL?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.6
24d	Does the SWPPP identify measures to ensure that discharges of pollutants from the site will be consistent with the assumptions and requirements of the approved TMDL?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.6
<b>8.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO ENDANGERED SPECIES</b>					
25	Was endangered/threatened species or critical habitat identified on or near the project area? <input type="checkbox"/> No; <i>If no, address Item 25a then skip to Item 27.</i> <input type="checkbox"/> Yes; <i>If yes, address Item 25a – 26.</i>				
25a	Does the SWPPP describe how this determination was made?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 3.3 & 5.7
26	Was the project found to adversely affect an endangered/threatened species or critical habitat? <input type="checkbox"/> No; <i>If no, skip to Item 27</i> <input type="checkbox"/> Yes; <i>If yes, address 26a – c.</i>				
26a	Does the SWPPP describe the species and/or critical habitat affected?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 3.3 & 5.7

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
26b	Does the SWPPP list measures for the protection of endangered/threatened species and/or critical habitat?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 3.3 & 5.7
26c	Does the SWPPP include documentation supporting a determination of permit compliance with regards to the Endangered Species Act?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 3.3 & 5.7
<b>9.0 APPLICABLE FEDERAL, STATE, HISTORIC, OR TRIBAL, LOCAL PROPERTIES</b>					
27	Were any historic sites identified on or near the project area? <input type="checkbox"/> No; <i>If no, address Item 27a then skip to Item 29.</i> <input type="checkbox"/> Yes; <i>If yes, address Item 27a – 28.</i>				
27a	Does the SWPPP describe how this determination was made?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		
28	Was the project found to affect historic properties/resources? <input type="checkbox"/> No; <i>If no, skip to Item 29.</i> <input type="checkbox"/> Yes; <i>If yes, address 28a.</i>				
28a	Does the SWPPP list measures for the protection of historic properties/resources?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		
29	Does the SWPPP describe the project's compliance with any applicable federal, state, local, or tribal requirements for soil and erosion control and storm water management?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.15

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.0 CONTROL MEASURES/BEST MANAGEMENT PRACTICES – THROUGHOUT ALL SECTIONS</b>					
30	Are BMPs listed under the appropriate subsection?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
31	Does the SWPPP reference the BMP manual or publication used as a source for each BMP described OR, if no BMP manual or publication was used to select or design a given BMP, then does the SWPPP state so and include a description of the design and placement of the BMP?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		DOT&PF Spec 641- 2.01
32	Are the BMP Detail sheets for each BMP included in App. B?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.6.2 SWPPP Template
33	As necessary, does the SWPPP cite the permit, DOT&PF specification or other commitment requiring specific BMPs?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		DOT&PF Spec 641- 2.01
34	Does the SWPPP describe the implementation of maintenance of control measures to minimize pollutants in discharges as necessary to meet applicable water quality standards?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		
35	Does the SWPPP describe removal of sediment from controls before accumulation sediment reaches: <ul style="list-style-type: none"> <li>• One-third (1/3) the above-ground height for silt fences</li> <li>• One-half (1/2) the above-ground</li> </ul>		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.13.3



Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
	height for storm water inlets, check dams, berms, or other control measures <ul style="list-style-type: none"> <li>• Or lower height based on manufacturer's specifications</li> </ul>				
<b>10.1 Minimize Amount of Exposed Soil During Construction Activity</b>					
36	Does the SWPPP outline measures to delineate the site including areas to be left undisturbed such as trees, sensitive areas, or buffers?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.1 DOT&PF Spec 641- 2.01
37	Does the SWPPP outline the sequence or phased construction activities to minimize the extent and duration of exposed soil?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.2 DOT&PF Spec 641- 2.01
38	Does the SWPPP describe how native topsoil will be preserved?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.2 DOT&PF Spec 641- 2.01
Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.2 Maintain Natural Buffer Areas</b>					
39	Does the project require natural buffer areas? (for projects with waters of the U.S. within or immediately adjacent to the property) <input type="checkbox"/> No; <i>If no, skip to Item 40.</i> <input type="checkbox"/> Yes; <i>If yes, address 39a.</i>				
39a	Does the identified buffer have a minimum width of 25 feet, or the width required by local ordinance? <input type="checkbox"/> No; <i>If no, address 40.</i> <input type="checkbox"/> Yes; <i>If yes, address 39b.</i>				2016 CGP: 4.2.3
39b	Does the SWPPP provide the buffer width and explain why the 25-foot minimum was not feasible?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.3

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.3 Control Storm Water Discharges And Flow Rates</b>					
40	Does the SWPPP describe any control measures used to divert flows from exposed soils, slow down or contain storm water flows?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.5.1 & 4.2.5.2
41	Does the SWPPP describe velocity dissipation devices along the length of any conveyance channels and at channel or structure discharge points?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.5.4
42	Does the SWPPP describe how permanent storm water management controls will be made functional prior to site improvements (such as paving)?				2016 CGP: 4.2.5.5
<b>10.3.1 Protect Steep Slopes</b>					
43	Will steep slopes be present or created at the site during construction? Note: steep slopes are those 20% or greater in grade for a length of slope that exceeds 25 feet. <input type="checkbox"/> No; <i>If no, skip to Item 44.</i> <input type="checkbox"/> Yes; <i>If yes, address 43a and b.</i>				
43a	Does the SWPPP outline control measures for minimizing erosion from steep slopes?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.6
43b	Does the SWPPP describe how concentrated flows of storm water will be diverted away from the steep slopes?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2.6
<b>10.4 Storm Water Inlet Protection Measures</b>					
44	Are storm drains present at the site? <input type="checkbox"/> No; <i>if no, skip to Item 45.</i> <input type="checkbox"/> Yes; <i>if yes, address Items 44a.</i>				
44a	Does the SWPPP describe how storm water inlets will be protected?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.3.1 Spec 641-

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.5 Water Body Protection Measures</b>					
45	Does the SWPPP describe the measures used to minimize discharge of sediment into water bodies located on or immediately downstream of the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2 and 4.3
<b>10.6 Down-slope Sediment Controls</b>					
46	Does the SWPPP describe the measures installed along the down-slope perimeter where storm water will discharge from the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2 and 4.3
<b>10.7 Stabilized Construction Vehicle Access And Exit Points</b>					
47	Does the SWPPP describe measures to minimize off-site tracking of sediments?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2 and 4.3  DOT&PF Spec 641- 3.01
48	Does the SWPPP discuss removal of off-site accumulations of sediment to minimize off site impacts?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.2 and 4.3
<b>10.8 Dust Generation And Track Out From Vehicles</b>					
49	Does the SWPPP describe measures to minimize generation of dust and track out?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.3.5
<b>10.9 Soil Stockpiles</b>					
50	Will the project have stockpile soil onsite? <input type="checkbox"/> No; <i>if no, skip to Item 51.</i> <input type="checkbox"/> Yes; <i>if yes, address Items 50a – b.</i>				
50a	Does the SWPPP discuss measures to either stabilize or cover stockpiles, and protect with sediment trapping?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.3.6
50b	Does the SWPPP indicate that stockpiles will be located away from storm drain inlets, water bodies and conveyance channels where possible?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.3.6

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.10 Sediment Basins</b>					
51	Will the disturbed area exceed 10 acres in a common drainage at one time? <input type="checkbox"/> No; <i>If no, skip to Item 52.</i> <input type="checkbox"/> Yes; <i>If yes, address Item 51a.</i>				
51a	Does the SWPPP propose the use of sediment basin? <input type="checkbox"/> No; <i>If no, address Item 51b then skip to Item 52.</i> <input type="checkbox"/> Yes; <i>If yes, address Item 51c, then skip to Item 52.</i>				
51b	Does the SWPPP describe why a sediment basin is not practicable and provide for equivalent control measures?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.3.8
51c	Does the sediment basin provide storage for a calculated volume of run-off from the drainage area from a 2-yr/24-hr storm or provide 3,600 cubic feet of storage per acre drained?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.3.8
52	Does the SWPPP propose the use of smaller sediment basins and/or sediment traps? <input type="checkbox"/> No; <i>If no, skip to Item 53.</i> <input type="checkbox"/> Yes; <i>If yes, address Items 52a and b.</i>				
52a	Does the SWPPP discuss removal of sediment from sediment traps or sedimentation basins when design capacity has been reduced by 50 percent?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.3.13
52b	For any impoundment, does the SWPPP indicate that an outlet structure that withdraws water from the surface will be utilized?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.3.8.4
53	Does the SWPPP describe the measures installed along the down-slope boundaries?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.3.82 & 4.3.8.3
<b>10.11 Dewatering</b>					
54	Will the project include dewatering practices? <input type="checkbox"/> No; <i>If no, skip to 55.</i> <input type="checkbox"/> Yes; <i>If yes, address 54a and b.</i>				

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
54a	Does the project require an ADEC Excavation Dewatering General Permit NOI? (project will be dewatering within one 1,500 feet of a contaminated site) <input type="checkbox"/> No <input type="checkbox"/> Yes; If yes, is a copy included in the SWPPP? <input type="checkbox"/> No <input type="checkbox"/> Yes				
54b	Does the SWPPP describe treatment for dewatering discharges?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.4 DOT&PF Spec 641- 2.01
<b>10.12 Soil Stabilization</b>					
55	Does the SWPPP outline the general sequence of the stabilization practices that will be used to achieve temporary and permanent stabilization?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 3.6.3 DOT&PF Spec 641- 2.01
56	Does the SWPPP describe temporary and final stabilization practices?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.5 DOT&PF Spec 641- 2.01, 2.05 & 3.01
57	Does the SWPPP indicate that stabilization will be initiated and completed within the allowable timeframe outlined in the CGP after activities have ceased?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.5 DOT&PF Spec 641- 2.01
58	For projects anticipating a winter shutdown, does the SWPPP outline the methods used to address stabilization prior to, during and at the conclusion of winter shut-down? This includes: <ul style="list-style-type: none"> <li>• Temporary/permanent stabilization of conveyance channels</li> <li>• Temporary/permanent stabilization of disturbed slopes, soils and stockpiles</li> <li>• Erosion and sediment controls in anticipation of spring thaw</li> </ul>		<input type="checkbox"/> NA – winter shutdown not anticipated <input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.12 & 5.3.6.9.2 DOT&PF Spec 641- 2.01 & 3.03

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.13 Treatment Chemicals</b>					
59	Does the SWPPP propose to use treatment chemicals? <input type="checkbox"/> No; <i>If no, skip to Item 62.</i> <input type="checkbox"/> Yes; <i>If yes, continue. 59a-59j. Please note that any use of treatment chemicals must be identified on the project NOI. Ref. 2016 CGP 2.2.3.6</i>				
59a	Does the SWPPP identify the names of the person(s) who will handle and apply treatment chemicals and provide the dates of training in proper handling and application of treatment chemicals?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.1.7, 4.6.2.3, & 5.8.2.6
59b	Does the SWPPP identify the type of treatment chemicals to be used and the location of their use at the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.2.3
59c	Does the SWPPP state treatment chemicals will be stored in a sealed container under a storm-resistant cover or surrounded by secondary containment structure to prevent their discharge?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.6.2.3
59d	For each chemical, does the SWPPP include the manufacturer/supplier provided MSDS, specifications, and instructions for transport, handling, storage, application and disposal?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.1 & 5.8.2.6
59e	For each chemical, does the SWPPP include an approval by the EPA for potable use?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.1
59f	For each chemical, does the SWPPP include an approval by the EPA, Wash., Ore., Minn., Wisc., or Calif. for use in controlling erosion or sediment from agriculture or construction?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.1

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
59g	For each chemical, does the SWPPP include manufacturer/supplier provided test results that demonstrate the chemical is non-toxic to aquatic organisms when applied according to instructions?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.1
59h	Does the SWPPP document that the selected chemical(s) are appropriate for the site conditions and include project-specific test results?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.1 & 5.8.2.6
59i	For all applications, does the SWPPP specify that the chemical will be applied upstream from a pre-constructed physical control structure that provides adequate removal of sediments laden with treatment chemicals?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.2
59j	Does the SWPPP specify that the application method will avoid drift to non-target areas?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.3.1.2
60	Is water application of treatment chemicals anticipated, including conveyance channels? <input type="checkbox"/> No; <i>If no, skip to Item 61.</i> <input type="checkbox"/> Yes; <i>If yes, address 60a – b.</i>				
60a	For water applications, does the SWPPP indicate that treatment chemicals shall not be applied directly to waters of the U.S., and that the application will be through the use of manufactured products?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.3.2.3 & 4.6.3.2.4
60b	Does the SWPPP state there will be a minimum of 100 feet of ditch length downstream of the last manufactured product prior to reaching a water		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.3.2.4

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
	of the U.S.?				
61	Are any of the selected treatment chemicals cationic polymers? <input type="checkbox"/> No; <i>If no, skip to Item 62.</i> <input type="checkbox"/> Yes; <i>If yes, address 61a.</i>				
61a	Does the SWPPP identify the selected cationic polymer as being chitosan for use in an Active Treatment System? <input type="checkbox"/> No; <i>If no, please note that the use of cationic polymers is <u>prohibited</u> except for chitosan as part of an Active Treatment System. Ref. 2016 CGP 4.6.1.6</i> <input type="checkbox"/> Yes; <i>If yes, address 62.</i>				
<b>10.14 Active Treatment System Information</b>					
62	Will the project use an Active Treatment System (ATS)? <input type="checkbox"/> No; <i>If no, skip to Item 63.</i> <input type="checkbox"/> Yes; <i>If yes, address 62a – b.</i>				
62a	Does the SWPPP indicate that the required information on the ATS will be submitted to DEC at least 14 days prior to the start of operation and that this info will be provided in SWPPP Appendix P?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.6.3.3 DOT&PF Spec 641- 2.01 and DOT&PF SWPPP Template
62b	Is the operator of the ATS and their qualifications provided in the SWPPP? (see Checklist Item #5)		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP 4.6.1.7 & 5.3.3.3 DOT&PF Spec 641- 1.04, 2.01
<b>10.15 GOOD HOUSEKEEPING MEASURES</b>					
<b>10.15.1 Washing Of Equipment And Vehicles</b>					
63	Does the project include onsite washing of equipment and vehicles? <input type="checkbox"/> No; <i>If no, skip to Item 64.</i> <input type="checkbox"/> Yes; <i>If yes, address 63a – b.</i>				
63a	Does the SWPPP designate an area(s) for these activities and are they located, to the extent practicable, away from conveyance channels, storm drain inlets and water bodies?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.1 DOT&PF Spec 641- 2.01
63b	Does the SWPPP describe treatment of washwater and practices for equipment and vehicle washing? ( <i>e.g. no soap or solvent</i> )		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.1 DOT&PF Spec 641- 2.01



Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.15.2 Fueling And Maintenance Areas</b>					
64	Does the project include onsite equipment fueling and maintenance? <input type="checkbox"/> No; <i>If no</i> , skip to Item 65. <input type="checkbox"/> Yes; <i>If yes</i> , address Items 64a – d.				
64a	Does the SWPPP designate an area(s) for these activities and are they located, to the extent practicable, away from conveyance channels, storm drain inlets and water bodies?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.2 DOT&PF Spec 641- 2.01
64b	Does the SWPPP outline control measures to eliminate the potential for spills or leaked chemicals?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.2 DOT&PF Spec 641- 2.01, 2.02
64c	Does the SWPPP indicate that all spills or contaminated surfaces will be cleaned immediately?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.2 DOT&PF Spec 641- 2.02
64d	Does the SWPPP indicate that adequate clean up supplies will be available at all times?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.2 DOT&PF Spec 641-2.02
<b>10.15.3 Washout Of Applicators/Containers For Paint, Concrete And Other Materials</b>					
65	Does the project include use of concrete or paint? <input type="checkbox"/> No; <i>If no</i> , skip to Item 66 and ensure that the SWPPP states this. <input type="checkbox"/> Yes: <i>If yes</i> , address Items 65a - c.				
65a	Does the SWPPP designate an area(s) for these activities and is it located, to the extent practicable, away from conveyance channels, storm drain inlets and water bodies?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.4 DOT&PF Spec 641- 2.01
65b	Does the SWPPP indicate that the washout will be directed into a lined, water-tight container or pit?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.4 DOT&PF Spec 641- 3.01

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
65c	For concrete washout areas, does the SWPPP state that hardened concrete will be removed when it has reached ½ the height of the container?		<input type="checkbox"/> N/A – No concrete washout anticipated <input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.4
<b>10.15.4 Fertilizer Or Pesticide Use</b>					
66	Does the SWPPP propose the use of fertilizers and/or pesticides? <input type="checkbox"/> No; <i>If no, skip to Item 67.</i> <input type="checkbox"/> Yes; <i>If yes, address Items 66a – d.</i>				
66a	Does the SWPPP state that the manufacturer’s requirements for application rates and disposal will be followed?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.5
66b	Does the SWPPP describe how the application of fertilizer/pesticide will minimize loss of chemicals to storm water runoff?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.5
66c	Does the SWPPP describe how the use of pesticides will be in compliance with federal, state and local requirements?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.5.2
66d	Is a copy of authorization under the Pesticide General Permit for Discharges from the Application of Pesticides (AKG870000 or current version) and/or a Pesticide-Use Permit included?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.5.2
<b>10.16 Spill Notification</b>					
67	Does the SWPPP describe spill prevention and response measures or reference an HMCP/SPCC that is provided in the SWPPP?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.6 DOT&PF Spec 641- 2.02, 2.03

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
68	Does the SWPPP or HCMP/SPCC describe procedures for reporting a release of hazardous substance or oil		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.9.1 & 5.3.6 DOT&PF Spec 641- 2.02,
<b>10.17 Construction And Waste Materials</b>					
69	Does the SWPPP designate staging/storage area(s) and are they located, to the extent practicable, away from conveyance channels, storm drain inlets and water bodies?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.8.3 & 4.8.6 DOT&PF Spec 641-2.01
70	Does the SWPPP describe control measures to minimize the exposure of materials to precipitation, storm water and vandalism?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.3
71	Does the SWPPP identify construction and waste materials expected to be stored on site? This includes demolition debris, construction and domestic waste, sanitary waste, and hazardous/ toxic waste.		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.6 & 5.3.7 DOT&PF Spec 641- 2.02
72	Does the SWPPP describe the handling and disposal of all waste materials, and are these procedures in accordance with federal, state and local requirements?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.6.2 DOT&PF Spec 641- 2.02
73	Does the SWPPP specify that hazardous/ toxic wastes/materials will be stored in sealed containers and covered storage areas?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.6.3 DOT&PF Spec 641- 2.02
74	For portable toilets, does the SWPPP indicate that containment will be used to prevent discharge of pollutants?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.8.6.4

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>10.18 Permanent/Post-Construction BMPs</b>					
75	Is the 18AAC72.600 Review documentation provided in the SWPPP?		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP 1.4.4.7 and 4.11 DOT&PF SWPPP Template Appendix D
76	Does the SWPPP describe and give location for all permanent storm water management controls that will be installed?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.6.8

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>11.0 INSPECTIONS</b>					
77	Is a preconstruction inspection required? <input type="checkbox"/> No; <i>If no</i> , skip to Item 78. <input type="checkbox"/> Yes; <i>If yes</i> , address Item 77a.				
77a	Does the SWPPP include a completed Preconstruction Site Visit Form (Form 25D-106) in Appendix L?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		DOT&PF Spec 641- 3.01.1
78	Does the SWPPP identify the persons/positions responsible for conducting inspections (e.g. the Contractor's SWPPP Manager and the DOT&PF Storm Water Inspector) and document that these persons are AK-CESCL (or equivalently) certified?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.4 & 6.3 DOT&PF Spec 641- 1.04
Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>11.1 Inspection Schedule</b>					
79	Does the SWPPP identify the inspection frequency to be followed, and is it in accordance with CGP requirements?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.41.2 & 6.1 DOT&PF Spec 641- 2.01
80	Does the Project expect a winter shutdown? <input type="checkbox"/> No; <i>If no</i> , skip to Item 81.				

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
	<input type="checkbox"/> Yes; If yes, address Items 80a and b.				
80a	Does the SWPPP provide dates of fall freeze up and spring thaw?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 4.12, 5.3.6.9.1 & 5.8.2.2
80b	Does the SWPPP describe the methods that will be used to address winter considerations?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.3.6.9.2
<b>11.2 Inspection Form Or Checklist</b>					
81	Does the SWPPP state DOT&PF Inspection Report Form (25D-100) will be used for inspections?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.4.1.3 DOT&PF Spec 641- 2.01 & 3.03
<b>11.3 Corrective Action Procedures</b>					
82	Does the SWPPP state that easily remedied corrective actions will be completed as soon as practicable?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.4.1.4 & 8.2.1.1 DOT&PF Spec 641- 3.01
83	Does the SWPPP state that all other corrective actions will be completed so that the following requirements are met? <ul style="list-style-type: none"> <li>• Completed in time to protect water quality</li> <li>• Completed in less than 7 calendar days</li> <li>• Before the next scheduled inspection</li> <li>• Completed no later than the Complete-by date on the Inspection Report</li> </ul>		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.4 & 8.2.1.2 DOT&PF Spec 641- 3.01 & 3.03
84	Does the SWPPP state that a Corrective Action Log will be maintained and include a reference to Appendix J where a blank Corrective Action Log (Form 25D-112) must be		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 8.3 DOT&PF Spec 641- 2.01 and 3.03

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
	included?				
<b>11.4 Inspection Recordkeeping</b>					
85	Does the SWPPP state a record of inspections and corrective actions will be retained with the SWPPP for at least 3 years from the date that the permit coverage expires or is terminated?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.4.2 DOT&PF Spec 641- 3.02
<b>12.0 MONITORING PLAN (IF APPLICABLE)</b>					
86	Does the project require a monitoring plan? (discharges to a water body with a TMDL for sediment or turbidity, and disturbs 20+acres at a time) <input type="checkbox"/> No; <i>If no, skip to Item 87.</i> <input type="checkbox"/> Yes; <i>If yes, address Items 86a – e.</i>				
86a	Does the SWPPP include a copy of the monitoring plan in App. H?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.5 DOT&PF Spec 641-2.01
86b	Does the SWPPP identify the persons/positions responsible for conducting the monitoring and their training?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.5 and Appendix C
86c	Does the SWPPP include the schedule for monitoring?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.5
86d	Does the SWPPP include the form used to record monitoring results?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.5
86e	Does the SWPPP identify how corrective action identified from monitoring will be addressed?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.5
<b>13.0 POST AUTHORIZATION RECORDS</b>					
87	Does App. F include a copy of the current (2016) CGP?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.8.1 DOT&PF Spec 641- 2.01
88	Does App. F provide a place to put all the certified eNOIs and acknowledgement letters		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.8.1

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
	from ADEC?				
<b>13.1 Additional Documentation Requirements</b>					
89	Does the SWPPP state a Grading and Stabilization Log (Form 25D-110) will be maintained and included in App. G		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.8.2.1
90	Does the SWPPP state copies of completed Inspection Reports (Form 25D-100) will be included in App. K?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.8.2.3
91	Does the SWPPP state copies of completed Monitoring Reports (if applicable) will be included in App. H		<input type="checkbox"/> N/A <input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.8.2.4
92	Does the SWPPP state documentation for chemical-treatment processes (if applicable) will be included in App. P		<input type="checkbox"/> N/A <input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.8.2.6
93	Does the SWPPP state the Corrective Action Log (Form 25D-112) will be included in App. J?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.8.2.8 & 5.8.2.9
<b>13.1.1 Records of Employee Training</b>					
94	Does the SWPPP state that documentation of training will be done on the Training Log Form (Form 25D-125) and completed forms will be included in Appendix I?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 4.14, 5.8.2.7 DOT&PF Spec 641- 2.01 and 3.01
<b>14.0 MAINTAINING AN UPDATED SWPPP</b>					
<b>14.1 Log Of SWPPP Modifications</b>					
95	Does the SWPPP state that an Amendment Log (Form 25D-114) will be maintained and reference Appendix M, where the Log will be kept?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.8.2.5 & 5.9.2 DOT&PF Spec 641- 2.01 & 3.03

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>14.2 Deadlines For SWPPP Modifications</b>					
96	Does the SWPPP state that any revisions must be completed within 7 days of the identified need?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.9.3 DOT&PF Spec: 641-3.03
<b>15.0 ADDITIONAL SWPPP REQUIREMENTS</b>					
<b>15.1 Retention Of SWPPP</b>					
97	Does the SWPPP state a current copy will be kept at the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.10.1 DOT&PF Spec 641- 3.02
<b>15.2 Main Sign Entrance</b>					
98	Does the SWPPP state that a sign will be posted conspicuously near the main entrance of the site, which will contain copies of the NOIs?		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP: 5.10.2 DOT&PF Spec 641- 3.01

Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
<b>15.3 Availability of SWPPP</b>					
99	Does the SWPPP state that it will be made available upon request to the ADEC, EPA, or other state, federal, tribal or local agency inspectors.		<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		2016 CGP 5.10.3 DOT&PF Spec, 641-3.02
<b>15.4 Signature and Certification</b>					
100	Is there a place to include the Contractor's Superintendent certification of the SWPPP once DOT&PF approves it? (use Form 25D-111)		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP 5.1.2.4 & 5.10.4 DOT&PF Spec 641- 1.05 & 2.04
101	Is the Contractor's Superintendent delegated signatory authority with Form 25D-108?		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP Appendix A, Part 1.12 DOT&PF Spec 641- 1.05
102	Is there a place to include the DOT&PF Project Engineer certification (Form 25D-109)		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP 5.1.2.4 & 5.10.4



Item #	Requirement	Location in SWPPP	Addressed?	Deficiencies	Requiring Document(s)
103	Is the DOT&PF Project Engineer delegated signatory authority (Form 25D-107) included in the SWPPP?		<input type="checkbox"/> No <input type="checkbox"/> Yes		2016 CGP Appendix A, Part 1.12 DOT&PF Spec 641-1.05

**APPENDICES**

Item #	Required Appendix	Provided?	Deficiencies	Requiring Document(s)
104	A. Site Maps and Drawings – See Items #18 – 19			
105	B. BMP Details – See Item #32			
106	C. Project Schedule	<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		
107	D. Supporting Documentation: <ul style="list-style-type: none"> <li>• TMDLs</li> <li>• Endangered Species</li> <li>• Historical Properties</li> <li>• DEC Non-Domestic Wastewater Plan Review No-Objection Letter</li> <li>• DEC Dewatering Permit</li> <li>• Other Permits or Requirements</li> </ul>	<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		
108	E. Delegation of Authority, Subcontractor Certifications Project Staff Tracking Personnel Qualifications	<input type="checkbox"/> No <input type="checkbox"/> Yes, but deficient <input type="checkbox"/> Yes		
109	F. Permit Conditions: <ul style="list-style-type: none"> <li>• Copy of Signed Notices of Intent</li> <li>• Confirmation of Delivery of NOIs to ADEC</li> <li>• Copy of Letters from ADEC Authorizing Coverage, with ADEC NOI Tracking Numbers</li> <li>• Copy of 2016 Alaska Construction General Permit</li> </ul>	<input type="checkbox"/> No <input type="checkbox"/> Yes		
110	G. Grading and Stabilization Records - See Item #89			
111	H. Monitoring Plan (If Applicable) and Reports – See Items #86 & 91			
112	I. Training Records - See Item #94			
113	J. Corrective Action Log and Delayed Action Item Reports - See Item #84			
114	K. Inspection Records - See Item #90			
115	L. SWPPP Preparer’s Site Visit - See Item #77			
116	M. SWPPP Amendment Log - See Item #95			
117	N. Daily Record of Rainfall	<input type="checkbox"/> No <input type="checkbox"/> Yes		
118	O. Hazardous Material Control Plan -- See Item 67 & 68			

Item #	Required Appendix	Provided?	Deficiencies	Requiring Document(s)
119	P. Treatment Chemicals/Active Treatment Systems (if applicable) – See Item 59			
120	Q. Other: Antidegradation Analysis (if applicable) Correspondence with Regulatory Agencies Notices of Termination	<input type="checkbox"/> N/A <input type="checkbox"/> No <input type="checkbox"/> Yes		

# Appendix B

Alaska DOT&PF SWPPP Guide

## Appendix B. Alaska DOT&PF BMP Guide

The Alaska DOT&PF (Department) Best Management Practices (BMP) Guide for Erosion and Sediment Control is intended to assist in the selection of BMPs capable of contributing to the goal of stormwater management as required under the Alaska Department of Environmental Conservation (ADEC) current Alaska Construction General Permit (CGP) and the current DOT&PF specification requirements. This guide is recommended to assist the following:

1. Erosion and sediment control plan (ESCP) preparers
2. Contractor Storm water pollution and prevention plan (SWPPP) preparers
3. Maintenance and operations (M&O) personnel

When these BMPs are used as part of an ESCP or SWPPP, it assists in compliance with the CGP, EPA water quality regulations, Alaska Pollutant Discharge Elimination System (APDES), and other project-specific permit requirements. The guide will be revised as new practices, laws, and technologies are developed. This is not a stormwater design guide for permanent structural measures although some practices are common to both. This guide provides a compilation of BMPs that have been found to work in all areas of Alaska when properly selected, designed, and installed. The description for each BMP is listed below. The BMPs described are not all-inclusive as there are many variations to these practices according to site-specific conditions. Table B-1 lists the possible appropriate uses for selected erosion control practices for ESCP, and SWPPP drawings.

- Selection considerations
- Design and materials
- Application and installation
- Inspection and maintenance
- Measurements
- Removal

Users of this guide are encouraged to utilize this as a BMP selection tool. The specific selection and application of BMPs is best handled by personnel trained in E&SC principals and fundamentals, which include the following:

- Design Engineers
- State or regional hydraulics Engineers
- Landscape Architects
- Engineering Assistants under the supervision of an Engineer or Architect
- Those with CPESC or CISEC certification
- Those with AK-CESCL certification

**Table B-1  
Matrix for BMP Selection**

Erosion and Sediment Control Measures	Structural Measures		Stabilization (Erosion Control)	Temporary/Permanent
	Velocity Control	Sediment Control		
Compost Berm BMP-04.00		X		T, P
Compost Sock BMP-05.00		X		T, P
Concrete Washout BMP-06.00				T
Contained Silt Control System BMP-07.00		X		T
Culvert Inlet Protection BMP-08.00		X		T
Excavation Dewatering BMP-09.00				T
Fiber Rolls for Erosion and Sediment Control BMP-10.00			X	T
Interception Ditch BMP-11.00	X			T, P
Plastic Covering BMP-12.00		X		T
Prefabricated Barrier System BMP-13.00	X			T
Prefabricated Driving Ground Protection Mat BMP-14.00		X		T
Pumped Stream Diversion BMP-15.00		X		T
Rock Filter Berm BMP-16.00	X			T, P
Rock Slope Armor BMP-17.00			X	T, P
Rolled Erosion Control for Slopes BMP-18.00			X	T, P
Silt Curtain BMP-19.00		X		T

Erosion and Sediment Control Measures	Structural Measures		Stabilization (Erosion Control)	Temporary/Permanent
	Velocity Control	Sediment Control		
Silt Fence BMP-20.00		X		T
Slope Drain BMP-21.00 & 22.00	X			T
Stabilized Construction Exit BMPs-23.00 & 24.00		X		T
Storm Drain Inlet Sediment Protection BMPs-25.00, 26.00, 27.00, 28.00, 29.00		X		T
Surface Roughening BMP-30.00			X	T
Temporary Check Dam BMPs-31.00, 32.00, 33.00	X			T, P
Temporary Diversion Conveyance BMPs-34.00 & 35.00	X			T, P
Tire Wash BMPs 36.00 & 37.00		X		T
Vegetative Buffer BMP-38.00		X		T, P
Cold Weather Stabilization BMP-40.00			X	T
Sanitary Waste Management BMP-41.00				T
Vehicle/Equipment Storage, Maintenance & Fueling BMP-42.00				T, P
Bridge Maintenance BMP-43.00				T, P

Erosion and Sediment Control Measures	Structural Measures		Stabilization (Erosion Control)	Temporary/Permanent
	Velocity Control	Sediment Control		
Ditch Maintenance BMP-44.00				T
Snow Removal BMP-45.00				
Compost Blanket BMP-50.00			X	T, P
Hydraulic Erosion Control Products BMP-51.00			X	T, P
Permanent Seeding & Soil Amendments BMPs-52.00 & 53.00			X	T
Site Delineation BMP-54.00				T
Street Sweeping BMP-55.00		X		T
Tackifier BMP-56.00			X	T, P
Temporary Seeding BMP-57.00			X	

## **BMP 04.00. Compost Berm**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Compost Berms are intended to intercept and slow sheet flow runoff, allowing suspended sediments to settle or be filtered out by the compost material.

#### *Description*

Compost Berms are composed of trapezoidal shaped berms made with compost. The berms can be temporary or permanent installations.

#### *Other Names*

Filtration Berm

#### *Applicability*

Compost Berms can be used in place of sediment (silt) fences and fiber rolls. They can be a good choice near streams since compost is an organic, biodegradable, renewable material and is not required to be removed at the end of a project. Removal of other types of best management practices (BMPs) can disturb soil by dislodging vegetation and exposing soil. Compost Berms can also be easily reshaped if they become damaged. However, repeated damage may require replacement or the addition of more compost material. Compost Berms are not intended to be installed in areas with concentrated flow.

#### *Selection Considerations*

Compost used for berms needs to be stable and mature. It should consist of both small and larger particle sizes, which will affect the filtration performance and longevity. Coarser grade compost is better for filtration and is less likely to be disturbed by rainfall or runoff. Finer grade compost is better for vegetation establishment. For Compost Berms, the ratio of coarse to fine grades should be 1:1. No compost should have particle sizes larger than 3 inches. All permanent compost berm installations should be seeded (see BMP 53, Permanent Seeding). All compost used should conform to U.S. Composting Council (USCC) standards.

#### *Design*

Compost Berms can be installed on slopes 2H:1V or flatter. Compost Berms should be installed no less than 1 to 2 feet high with a 4- to 6-foot wide base,

the specified height and width depend on the slope (see table on the drawing BMP – 04.00). For maximum filtration, install berms with a 4- to 6-foot wide base and a 2- to 3-foot wide top. Larger berms can be constructed if they are required on steeper slopes. The general shape for any compost berm should be that the base is twice as wide as the height of the berm. Providing seeding or plantings in conjunction with the compost helps to break up sediments and creates root pathways for storm water to penetrate into the compost. This helps to prevent the compost from becoming plugged with sediment.

#### *Relationship to Other Erosion and Sediment Control Measures*

Compost Berms can be used in place of sediment fences, and fiber rolls. Compost filters sediment and allows the runoff to pass through relatively more easily than silt fence, which acts as a dam to create ponding and settling. Tackifiers can be applied to compost installations to enhance performance if needed.

#### *Common Failures or Misuses*

Common failures are generally due to faulty application and maintenance. These failures include:

- Non-certified compost used.
- Can become plugged with fines and sediments.
- Inadequate shape and size of berms constructed.
- Used in highly concentrated flow areas.
- Damaged by construction-related activities.
- Ends of berms are not pointed upwards towards the top of the slope.

### SPECIFICATIONS

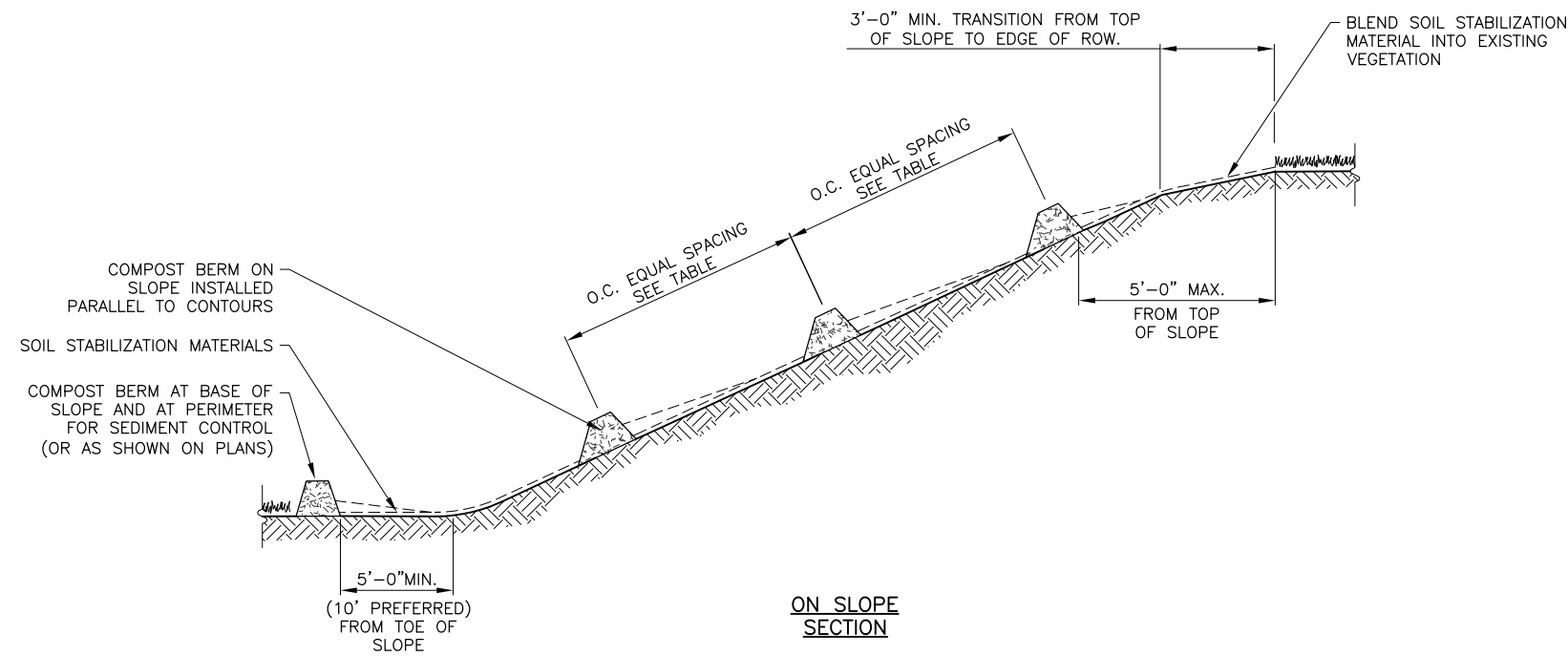
#### *Drawing*

- BMP-04.00 – Compost Berm

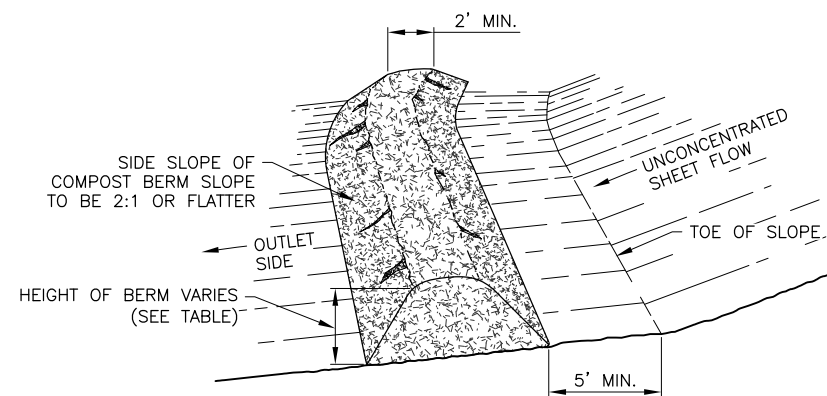
#### *Standard Specification*

- 659 – Compost Berm
- 750 – Compost





**ON SLOPE SECTION**



**PERSPECTIVE**

**COMPOST BERM**  
NOT TO SCALE

**COMPOST BERM NOTES:**  
**MATERIALS**  
COMPOST PER SECTION 750

**INSTALLATION**

1. INSTALL COMPOST BERMS AS SPECIFIED IN THE TABLE.
2. CONSTRUCT LARGER BERMS WHEN REQUIRED ON STEEPER SLOPES.
3. SHAPE ANY COMPOST BERM SO THE BASE IS TWICE AS WIDE AS THE HEIGHT OF THE BERM.
4. PROVIDE PERMANENT SEEDING FOR PERMANENT BERMS THAT ARE NOT BLADED SMOOTH.
5. SOIL STABILIZATION MATERIALS INCLUDE ROLLED EROSION CONTROL PRODUCTS, MULCH OR OTHER TEMPORARY GROUND COVER TO STABILIZE UNTIL VEGETATION IS ESTABLISHED.

**INSPECTION**

1. INSPECT FOR DAMAGE, CHANGES IN PRESCRIBED DIMENSIONS, SEDIMENT DEPTH, UNDERMINING, AND/OR OVERTOPPING.

**MAINTENANCE**

1. RESHAPE OR ADD ADDITIONAL COMPOST TO DAMAGED SECTIONS OF BERM TO PRESCRIBED DIMENSIONS.
2. REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES ONE-HALF OF THE BERM HEIGHT OR ONE-THIRD OF THE AVAILABLE STORAGE IF PROTECTING A WATER BODY OR STORM DRAIN INLET.
3. REPAIR DAMAGE DUE TO AND CORRECT FOR UNDERMINING AND OVERTOPPING.

**REMOVAL**

1. BLADE SMOOTH AND SEED ALL BERMS TO PREVENT POOLING UPON COMPLETION OF THE PROJECT. UNLESS THE CONTRACT OR ENGINEER DIRECTS THEY MAY BE LEFT AS PERMANENT BERMS.

**COMPOST BERM DIMENSIONS AND SPACING BASED ON SLOPE**

SLOPE (H:V)	BERM O.C. SPACING	BERM DIMENSIONS		
		HEIGHT	BOTTOM WIDTH	TOP WIDTH
5:1 - 2:1	50 FT	1.3 FT	5.5 FT (MIN.)	2 FT
> 2:1	25 FT	1.5 FT	6 FT (MIN.)	2 FT

REVISIONS		
Date	Description	By

State of Alaska DOT&PF

**COMPOST BERM**

A  
P  
P  
R  
O  
V  
E  
D

Date 12/2015 X/XX/XX

## **BMP 05.00. Compost Sock**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Compost Socks are intended to intercept and slow sheet flow runoff, allowing suspended sediments to settle or be filtered out by the compost material.

#### *Description*

Compost Socks are biodegradable (or photodegradable) mesh tubes/socks filled with compost. The socks can be temporary or permanent installations.

#### *Other Names*

Filter Socks

#### *Applicability*

Compost Socks can be used in place of sediment (silt) fences and fiber rolls. They can sometimes be the most economical solution because compost does not require any special trenching or construction. This is especially important near streams since compost is an organic, biodegradable, renewable material and is not required to be removed at the end of a project. Removal of other types of best management practices (BMPs) can disturb soil by dislodging vegetation and exposing soil. Compost Socks can also be easily repaired if they become damaged. Compost Socks are not intended to be installed in areas with concentrated flow.

#### *Selection Considerations*

Compost used in socks needs to be stable and mature. It should consist of both small and larger particle sizes, which will affect the filtration performance and longevity. Coarser grade compost is better for filtration and is less likely to be disturbed by rainfall or runoff. Finer grade compost is better for vegetation establishment. For socks, the ratio of coarse to fine grades should be 1:1. No compost should have particle sizes larger than 3 inches. All compost used should conform to U.S. Composting Council (USCC) standards

#### *Design*

Compost Socks should be constructed of 8-inch to 12-inch diameter, or larger, biodegradable (or photodegradable) mesh tubes/socks. Compost Socks can be placed on any slope but they need to be anchored appropriately. Compost Socks should be

placed no closer than 5 feet from the toe of slopes to allow runoff to pool. They should be installed parallel with the contours of the slope with the ends of the socks pointed towards the upslope. This enables runoff to pond within the extent of the sock and allows suspended sediments to settle.

For long-run applications, the ends of Compost Socks should be laced together or be overlapped to form a continuous length. Wood stakes should be used to secure compost socks in place if installed on slopes. The drawing says to stake per the manufacturer's recommendations, but generally stakes are needed if 3:1 or steeper. To provide extra support for staked Compost Socks, rope can be used to lash the stakes together. However, if stakes and rope are used they are required to be removed after a project is completed. The contents of Compost Socks can remain after a project is completed but the all netting (or mesh) is required to be removed after a project is completed.

#### *Relationship to Other Erosion and Sediment Control Measures*

Compost Socks can be used in place of sediment fences, and fiber rolls. Compost filters sediment and allows the runoff to pass through relatively more easily than silt fence, which acts as a dam to create ponding and settling. Tackifiers can be applied to compost installations to enhance performance if needed.

#### *Common Failures or Misuses*

Common failures are generally due to faulty application and maintenance. These failures include:

- Non-certified compost used.
- Non-biodegradable mesh tubes used.
- Can become plugged with fines and sediments.
- Used in highly concentrated flow areas.
- Damaged by construction-related activities.
- Ends of socks are not pointed upwards towards the top of the slope.
- Socks must be in uniform contact with the ground for maximum effectiveness.

- 12-inch diameter socks can become heavy and sag when installed on slopes steeper than 3:1

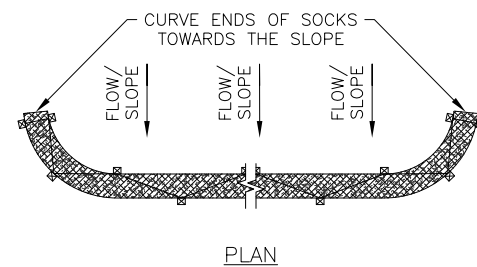
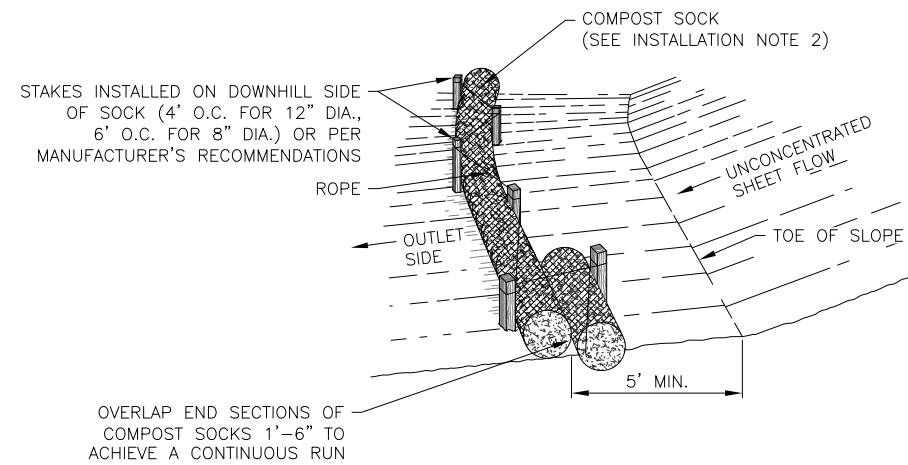
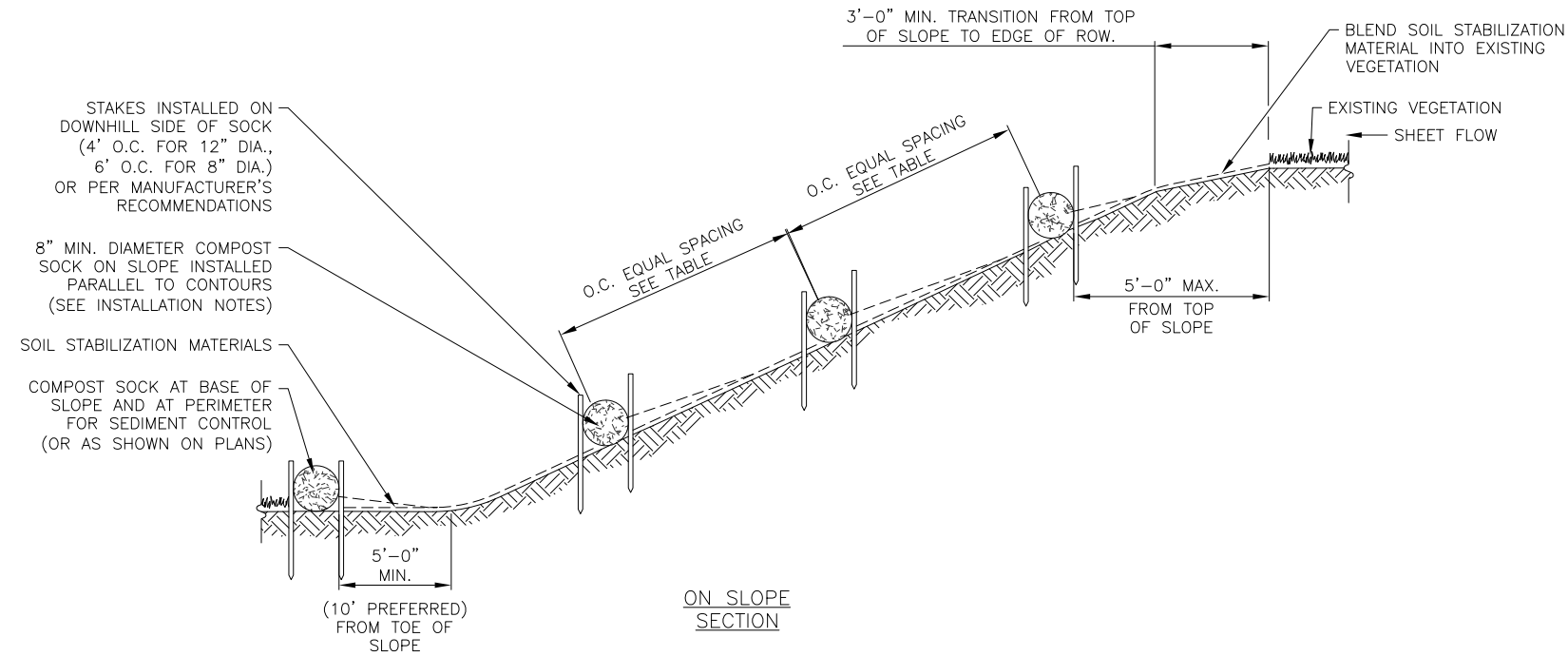
### SPECIFICATIONS

#### Drawing

- BMP-05.00 -- Compost Sock

#### Standard Specification

- 664 – Compost Sock
- 750 – Compost



**COMPOST SOCK**  
NOT TO SCALE

**COMPOST SOCK NOTES:**

**MATERIALS**  
COMPOST PER SECTION 750  
COMPOST SOCKS: 8", 12", 18", 24" NOMINAL  
STAKES: NON-TREATED WOOD.

**INSTALLATION**

1. INSTALL STAKES PER MANUFACTURER'S RECOMMENDATIONS.
2. PLACE COMPOST SOCKS NO CLOSER THAN 5 FEET FROM THE TOE OF SLOPES TO ALLOW RUNOFF TO POOL.
3. INSTALL PARALLEL WITH THE CONTOURS OF THE SLOPE WITH THE ENDS OF THE SOCKS POINTED TOWARDS THE UPSLOPE.
4. LACE TOGETHER AND OR OVERLAP FOR LONG-RUN APPLICATIONS TO FORM A CONTINUOUS LENGTH.
5. USE WOOD STAKES TO SECURE COMPOST SOCKS IN PLACE IF INSTALLED ON SLOPES.
6. SOIL STABILIZATION MATERIALS INCLUDE ROLLED EROSION CONTROL PRODUCTS, MULCH, OR OTHER TEMPORARY GROUND COVER TO STABILIZE UNTIL VEGETATION IS ESTABLISHED.

**INSPECTION**

1. INSPECT FOR DAMAGE, DISPLACEMENT, SEDIMENT DEPTH, UNDERMINING, AND/OR OVERTOPPING.

**MAINTENANCE**

1. REPAIR OR REPLACE DAMAGED OR DISPLACED COMPOST SOCKS.
2. REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES ONE-HALF OF THE SOCK HEIGHT OR ONE-THIRD OF THE AVAILABLE STORAGE IF PROTECTING A WATER BODY OR STORM DRAIN INLET.

**REMOVAL**

1. REMOVE MESH/TUBES FOR PERMANENT COMPOST SOCKS AND THE CONTENTS MAY REMAIN. ALL STAKES AND ROPE, IF USED, SHOULD BE REMOVED FROM THE PROJECT AND DISCARDED.

**COMPOST SOCK SPACING BASED ON SLOPE**

SLOPE (H:V)	SOCK O.C. SPACING
5:1 - 2:1	50 FT
> 2:1	25 FT

REVISIONS		
Date	Description	By

State of Alaska DOT&PF

**COMPOST SOCK**

A  
P  
P  
R  
O  
V  
E  
D

Date **12/2015** X/XX/XX

## BMP 06.00. Concrete Washout

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### DESIGN CONSIDERATIONS

#### *Objectives*

Concrete Washout Containment prevents the discharge of concrete waste pollutants to stormwater by providing on-site washout containment in a designated and contained area.

#### *Description*

Concrete Washout Containment contains concrete and fluids from the chutes of concrete mixers and hoppers of concrete pumps when they are rinsed out after delivery. Containment areas allow for easier disposal of consolidated solids and prevent pollution from run-off or infiltration to groundwater. A washout facility can consist of a pre-fabricated container or self-installed (fabricated on-site) lined containment area, which can be above- or below-grade. Containment areas require sufficient volume to completely contain all liquid and waste concrete materials.

#### *Applicability*

Concrete Washout Containment is required on projects where concrete, stucco, mortar, grout, and/or cement are used as construction materials.

#### *Selection Considerations*

The number and size of containment areas provided should be based on the expected demand for storage capacity.

- *Pre-fabricated Washout Containers:* Pre-fabricated washout containments can be any watertight unit that can contain all liquids and solid waste generated by washout operations. When available, pre-fabricated containers are delivered to the site and minimize installation efforts. They are also resistant to damage and protect against spills and leaks. Some companies will also offer complete service with their product, such as providing maintenance and regular disposal of waste materials. Such full-service options could relieve the superintendent of these responsibilities. However, when a contractor selects a company that provides such an option, they must also ensure that the company is properly disposing of materials and it would be prudent to give preference to companies that recycle collected materials.

- *Below-grade Containment:* Use of below-grade containment areas helps prevent breaches and reduces the likelihood of run-off. This option is recommended for projects expecting extensive concrete work or for airport projects. However, this option is not recommended for areas with high water tables or shallow groundwater; such as near natural drainages, springs, or wetlands.
- *Above-grade Containment:* Above-grade containment areas must be sized and installed correctly, and diligently maintained in order to be effective. However, particularly if a pre-fabricated container is unavailable, this option is better suited in areas with potentially high water tables to prevent leaching of wash water into groundwater, or in areas where excavation is not practical.

#### *Design*

*Location:* Concrete Washout Containment should be placed in a location that provides convenient access for concrete trucks, preferably near the area where the concrete is being poured. Place Concrete Washout Containment a minimum of 50 feet from storm drains, open ditches, or waterbodies, or provide secondary containment for the Concrete Washout Containment.

*Number of Containments:* Larger sites with extensive concrete work should have Concrete Washout Containment at multiple locations for ease of use. Multiple Washout Containments are also required if a single containment unit is not adequate for the volume of waste material generated before the containment structure is cleaned.

*Capacity:* Concrete Washout Containment should provide sufficient capacity to handle the expected volume of solids, wash water, and rainfall to prevent overflow and allow 12 inches of freeboard. To estimate capacity, assume 7 gallons of wash water and solids are generated from washing one truck chute, and 50 gallons are generated in washing out the hopper of a concrete ready-mix or pump truck. Estimate the number of trucks based on the total volume of concrete in the project, the hopper capacity of each concrete pump truck, the expected number of loads, and the planned maintenance interval.

*Containment Area:* For larger sites, it is recommended that self-installed containment (both above- and below-grade) areas be at least 10 feet wide with sufficient length and depth to provide the required capacity. Above-grade self-installed containment areas shall be limited to a size and capacity for which the selected outside barrier is designed to remain structurally sound when filled with waste materials.

*Cover:* A temporary cover should be provided to prevent rain or other precipitation from filling the containment area and causing wash water overflow. The cover should be a secure, non-collapsing, non-water collecting cover.

*Signage:* Each on-site facility must have highly visible signage to indicate washout containment locations. Signs should be at least 48 by 24 inches and have 6-inch high contrasting letters, placed at a height of at least 3 feet above ground level and within 30 feet of the facility.

#### *Relationship to Other Erosion and Sediment Control Measures*

*Operator Education:* Use of Concrete Washout Containment as a best management practice (BMP) is only successful if concrete truck operators utilize them. Operators need to be made aware of the presence of these containments. All concrete truck operators, including those of subcontractors, should be trained on the importance of managing concrete waste, washout procedures, and washout locations.

#### *Common Failures or Misuses*

- Overflow and discharge of waste when the containment area is not covered prior to anticipated rainfall and/or when accumulated liquid wastes have not been removed.
- Leaking resulting from torn or damaged liners going unnoticed or not being replaced, with consequent discharge of washout liquid or slurry to waterways, storm drains, or directly onto the ground.
- Lack of communication to truck drivers of the necessity of using the containment area for washout.
- Compromised structural integrity due to miscalculated capacity and installation,

particularly for self-installed, above-grade containment.

- Insufficient quantity and/or size to contain all liquid and concrete waste generated by washout operations.

#### SPECIFICATIONS

##### Standard Specification

- 665 – Concrete Washout

##### Drawing

- BMP – 06.00 Concrete Washout, Sheets 1 & 2

**CONCRETE WASHOUT GENERAL NOTES:**  
**MATERIALS**

PRE-FABRICATED CONTAINERS: MADE OF STURDY MATERIALS THAT ARE WATER TIGHT.

FABRICATED ON-SITE CONTAINMENT:

1. BARRIER/SIDEWALLS: MAKE SIDEWALLS OF AN ABOVE-GRADE CONTAINMENT AREA FROM EARTHEN BERMS, BARRIER WALLS, WOOD PLANKS, OR OTHER MATERIALS THAT WILL BE STRUCTURALLY SOUND WHEN FILLED WITH WASTE MATERIALS.
2. LINER: IMPERMEABLE PLASTIC SHEETING OF AT LEAST 10 MIL THICKNESS, AND FREE OF HOLES, TEARS, AND OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
3. ANCHORS: SECURE THE LINER FOR ABOVE-GRADE CONTAINMENT AREAS AND SIDEWALL MATERIALS OTHER THAN BERMS WITH ANCHORS. USE SANDBAGS, 6-INCH WIRE STAPLES, AND WOOD OR METAL STAKES AS ANCHORS, BUT NOT LIMITED TO ONLY THEM.

SIGNS: DURABLE, RIGID MATERIAL WITH 6-INCH HIGH CONTRASTING LETTERS, PLACED AT A HEIGHT OF AT LEAST 3 FEET ABOVE GROUND LEVEL.

RAIN COVER: SECURE, NON-COLLAPSING, NON-WATER COLLECTING RAIN COVER, REQUIRED PRIOR TO PREDICTED WET WEATHER TO PREVENT ACCUMULATION AND OVERFLOW OF PRECIPITATION.

**INSTALLATION**

1. INSTALL SIGNS WITHIN 30 FEET OF THE WASHOUT.
2. IF THE WASHOUT IS LOCATED ON UNDEVELOPED PROPERTY OR OFF-PAVEMENT, PROVIDE A STABILIZED CONSTRUCTION EXIT.
3. PLACE CONCRETE WASHOUT CONTAINMENT A MINIMUM OF 50 FEET FROM STORM DRAINS, OPEN DITCHES, OR WATERBODIES, OR PROVIDE SECONDARY CONTAINMENT FOR THE WASHOUT.
4. PROVIDE SUFFICIENT CAPACITY TO HANDLE THE EXPECTED VOLUME OF SOLIDS AND WASH WATER AT 50% MAX CAPACITY AND ALLOW 12 INCHES MINIMUM OF FREEBOARD.
5. PRE-FABRICATED WASHOUT CONTAINERS ARE USUALLY DELIVERED ASSEMBLED. IF ASSEMBLY IS REQUIRED, FOLLOW MANUFACTURER'S INSTRUCTIONS.
6. SELF-INSTALLED CONTAINMENT:
  - a. ABOVE-GRADE WASHOUT: CONSTRUCT THE SIDEWALLS TO THE DIMENSIONS SHOWN ON THE DRAWINGS. IF NOT USING AN EARTHEN BERM FOR THIS PURPOSE, ENSURE THAT THE SIDEWALL MATERIAL IS SECURE AND EACH UNIT IS BUTTED TIGHTLY END TO END. LINE THE ENTIRE AREA WITH THE LINING MATERIAL, BRINGING THE SHEETING UP OVER THE SIDEWALLS AND SECURING THE ENDS WITH SANDBAGS, STAPLES OR OTHER APPROPRIATE ANCHORS.
  - b. BELOW-GRADE WASHOUT: EXCAVATE A FLAT, SUBSURFACE PIT TO THE DESIRED SIZE AND CAPACITY FOR THE CONTAINMENT AREA. THE RESULTING SIDEWALL SHOULD NOT EXCEED 3:1 SLOPES. PREVENT DAMAGE TO THE LINER BY KEEPING THE BASE OF THE PIT FREE OF ROCKS AND DEBRIS. USE THE EXCAVATED MATERIAL TO CREATE A BERM ALONG THREE SIDES OF THE PIT, LEAVING THE SIDE PROVIDING ACCESS RELATIVELY FLAT. IT IS RECOMMENDED THAT THE BERM BE AT LEAST 1-FOOT HIGHER THAN EXISTING GROUND. LINE THE ENTIRE AREA WITH THE LINING MATERIAL, BRINGING THE SHEETING UP OVER THE SIDEWALLS AND BERM, AND SECURING THE ENDS WITH SANDBAGS OR OTHER APPROPRIATE ANCHORS.

**INSPECTION**

1. INSPECT AND VERIFY THAT CONCRETE WASHOUT BMPS ARE IN PLACE PRIOR TO THE COMMENCEMENT OF CONCRETE WORK.
2. DETERMINE IF THE CONCRETE WASHOUT IS FILLED TO 50 PERCENT CAPACITY.
3. FOR SELF-INSTALLED CONTAINMENT:
  - a. INSPECT THE PLASTIC LINER TO ENSURE IT IS SECURELY ANCHORED AND INTACT.
  - b. INSPECT THE SIDEWALLS FOR LEAKS. ENSURE THE CONSTRUCTION DOESN'T DAMAGE THE SIDEWALLS.
4. FOR PRE-FABRICATED CONTAINMENT, INSPECT THE UNIT FOR LEAKS AND POTENTIAL DAMAGE.
5. CHECK TO ENSURE THAT EACH WASHOUT SIGN IS STILL SECURE AND VISIBLE.
6. IF THERE IS EVIDENCE THAT WASHOUTS ARE OCCURRING IN LOCATIONS OTHER THAN THE DESIGNATED WASHOUT: IMPROVE EXISTING SIGNAGE, INSTALL ADDITIONAL SIGNAGE, INCREASE COMMUNICATION WITH CONCRETE TRUCK DRIVERS, AND PROVIDE CONCRETE TRUCK DRIVERS WITH MAPS OF WASHOUT LOCATIONS WITH RESPECT TO POUR LOCATIONS.

**MAINTENANCE**

1. CLEAN EXISTING WASHOUTS BEFORE THE WASHOUT IS 50 PERCENT FULL. SOLIDIFY WITH BAGGED GROUT, VACUUM AND DISPOSE OF LIQUIDS IN AN APPROVED MANNER, OR ALLOW FOR EVAPORATION (CHECK WITH THE LOCAL SANITARY SEWER AUTHORITY TO DETERMINE IF THERE ARE SPECIAL DISPOSAL REQUIREMENTS FOR CONCRETE WASH WATER).
2. IF NECESSARY, PROVIDE AN ALTERNATE WASHOUT DURING EXISTING WASHOUT CLEANING.
3. RELINE SELF-INSTALLED CONTAINERS AFTER EACH CLEANING, BECAUSE EQUIPMENT CAN DAMAGE THE LINER. BEFORE RELINING, INSPECT THE CONTAINMENT STRUCTURE FOR SIGNS OF WEAKENING OR DAMAGE AND MAKE ANY NECESSARY REPAIRS. THEN LINE THE STRUCTURE WITH NEW PLASTIC SHEETING, CHECKING THAT IT IS FREE OF HOLES, TEARS, AND OTHER DAMAGE.
4. REPAIR DAMAGED WASHOUTS BEFORE THE NEXT CONCRETE POUR. IF NECESSARY, PROVIDE NEW WASHOUTS UNTIL THE EXISTING WASHOUTS ARE OPERATIONAL.
5. CONTAIN ANY SPILL OR DISCHARGE OF CONCRETE WASTE MATERIALS.
6. REPLACE OR INSTALL NEW SIGNAGE AS NEEDED.

**REMOVAL**

1. AN OPERATIONAL CONCRETE WASHOUT SHOULD REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT (OR PHASE OF THE PROJECT) IS POURED. WHEN THE CONCRETE WASHOUT IS NO LONGER NEEDED, THE LIQUID MUST BE EVAPORATED OR VACUUMED FOR DISPOSAL AND THE HARDENED SOLIDS MUST BE BROKEN UP, REMOVED, AND PROPERLY DISPOSED OF. DISPOSAL LOCATION TO BE APPROVED BY ENGINEER.
2. REMOVE FROM THE SITE PRE-FABRICATED WASHOUTS AND MATERIALS USED TO CONSTRUCT ABOVE-GRADE CONTAINMENT AREA AND PROPERLY DISPOSE OF THEM.
3. BACKFILL AND STABILIZE HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE CREATION OR REMOVAL OF THE WASHOUT WITH AN APPROVED BMP.

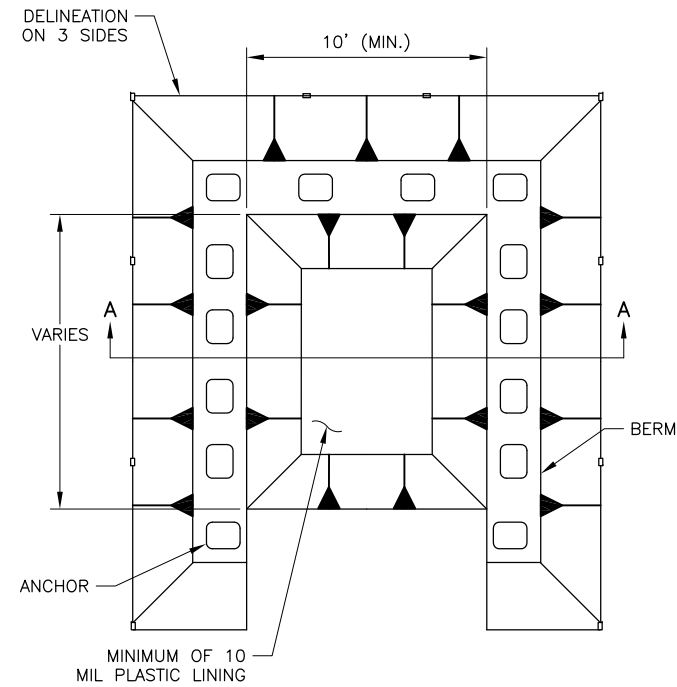
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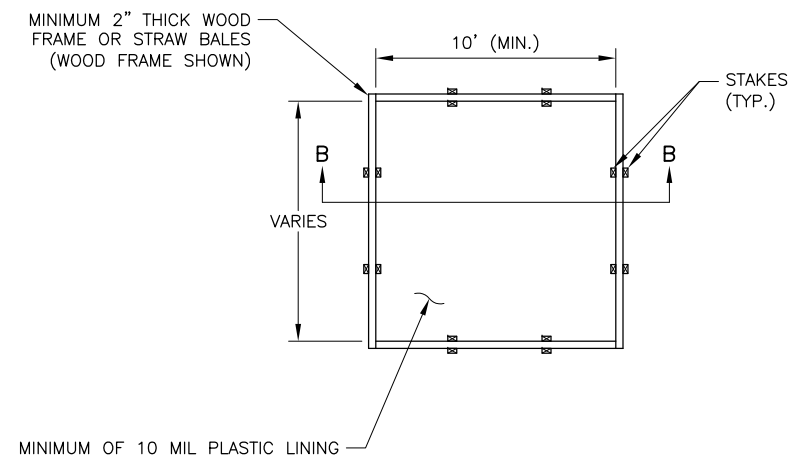
**CONCRETE WASHOUT  
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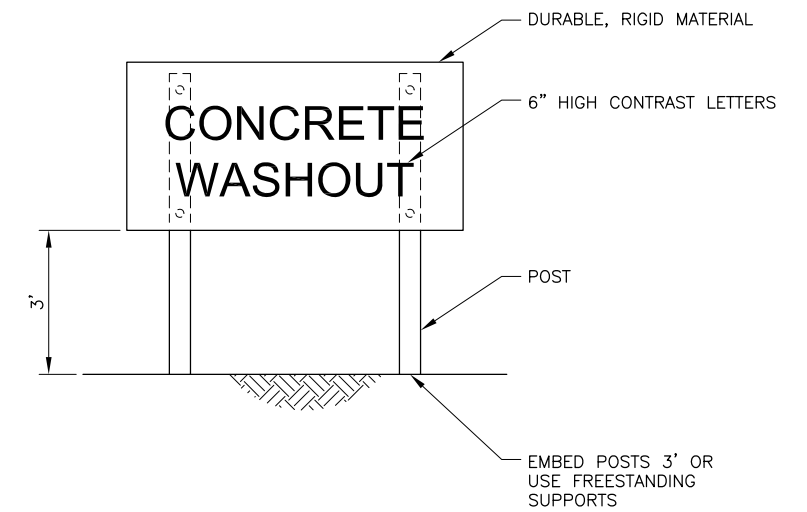
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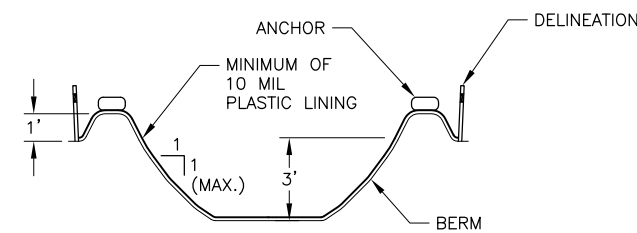
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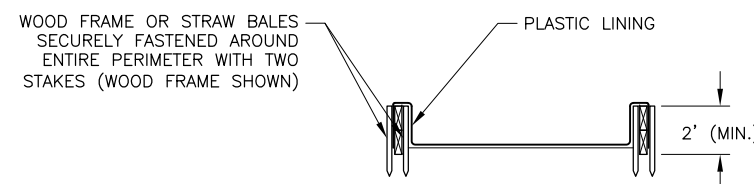
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WASHOUT SIGN  
NOT TO SCALE

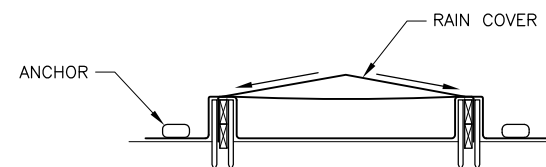


SECTION A-A



SECTION B-B

BELOW-GRADE CONCRETE WASHOUT  
FABRICATED ON-SITE  
NOT TO SCALE



SECTION B-B  
WITH PLASTIC RAIN COVER

ABOVE GRADE CONCRETE WASHOUT  
FABRICATED ON-SITE  
NOT TO SCALE

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**CONCRETE WASHOUT**  
**(FABRICATED ON-SITE)**

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## **BMP 07.00. Contained Silt Control System**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of a Contained Silt Control System is to trap sediment in construction site water and prevent it from being transported out of the project area to another area, or to a water body, while allowing water to flow through the geotextile fabric.

#### *Description*

A Contained Silt Control System is a bag made of non-woven geotextile fabric that is attached to a dewatering hose. Construction site water is intercepted, diverted, and pumped or gravity fed into one side of the filtration bag; gravel, sand, silt, and fines are collected in the bag while filtered water percolates through the bag.

#### *Other Names*

Gravity Bag Filter, Sediment Filter Bag, Filter Bag, Dirt Bag, Silt Bag, Dewatering Tube, Dewatering Bag

#### *Applicability*

Contained Silt Control Systems are applicable for treating sediment-laden water at a construction site. They are often used during excavation dewatering. The filtration bag causes minimal damage to the ground where it is located and requires a small footprint when compared to sedimentation basins.

#### *Selection Considerations*

- Contained Silt Control Systems are temporary filtration systems.
- Filtration bags are designed for one-time use.
- Filtration bags are available in an array of sizes and materials depending on site specifics.
- Filtration bags require less space and cause less damage to existing vegetation than sedimentation basins.
- Discharge rates on the filtration bags decrease as the bag collects sediment.
- An equipment access route and space for Contained Silt Control System installation, maintenance, and removal must be available

without encroaching into sensitive areas or off the project limits.

#### *Design*

Use manufacturer's specifications to determine the size of the filtration bag appropriate for the flow rate and expected volume. Place the filtration bag on a level, well-drained surface and provide high-flow bypass for the system. If the soil does not allow percolation, provide a non-erodible bed constructed from rock, straw, or other non-erodible material.

After water has percolated through the filtration bag, the filtration bag filled with sediment can be removed and disposed of off-site, or the bag can be cut open and the sediment can be mixed with the on-site soil and seeded for stabilization. The designer should indicate the conditions or restrictions that will be required for locating and removing the bag depending on the project and site.

#### *Relationship to Other Erosion and Sediment Control Measures*

Secondary barriers, such as silt fence or fiber rolls, may be placed around the filtration bag to provide additional sediment trapping. When there is limited space available, Contained Silt Control Systems can be used in place of sedimentation basins.

#### *Common Failures or Misuses*

- The bag becomes too heavy to remove with available equipment.
- The bag becomes too full to contain silt.
- Improperly sized mesh openings in the bag for the site soils and flow rate.
- Placement on a slope or uneven ground.
- Improperly sized bag for the flow rate.
- Overfilling the filtration bag with sediment.
- Use as a permanent filtration system.
- Reusing a filtration bag.

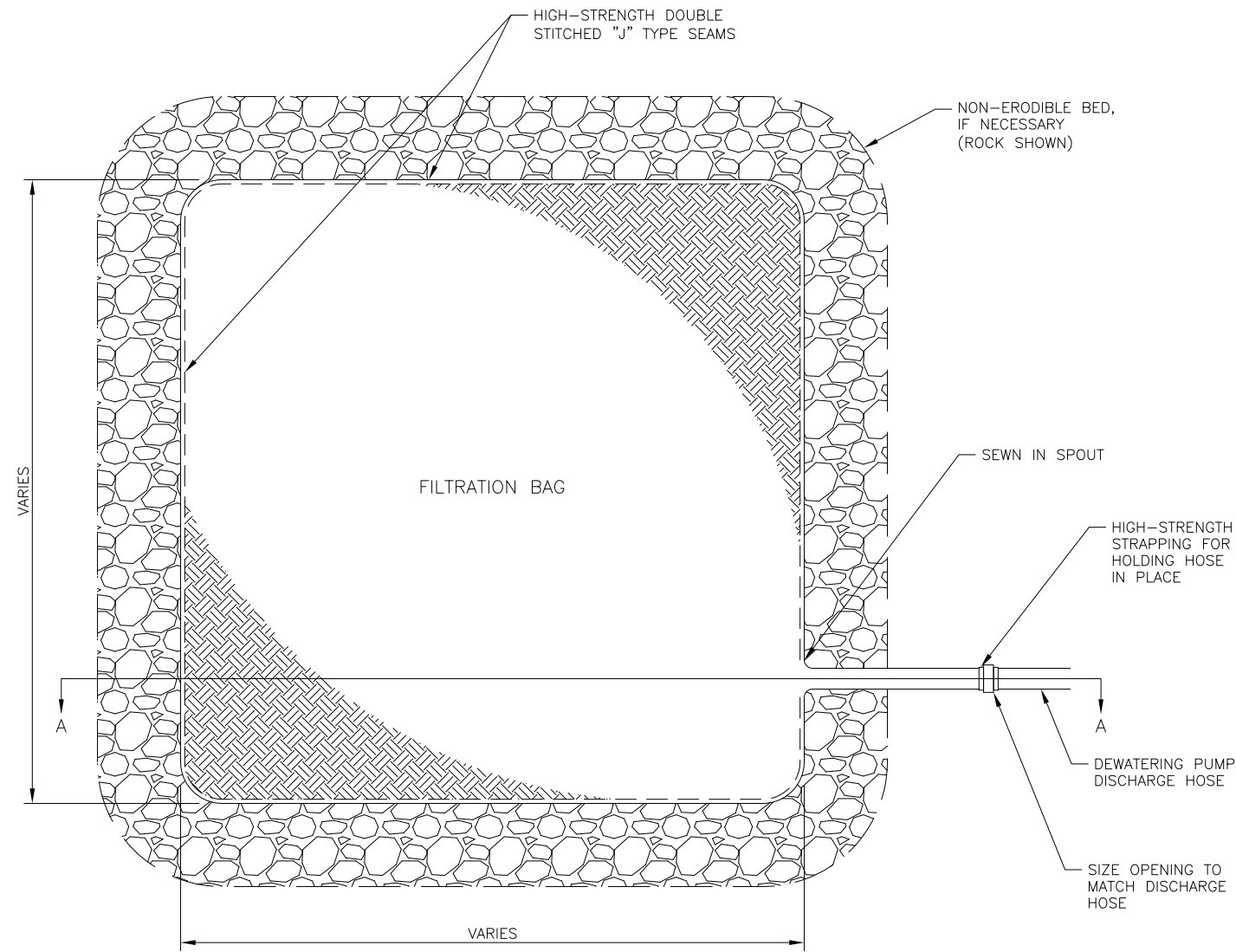
### SPECIFICATIONS

#### Standard Specification

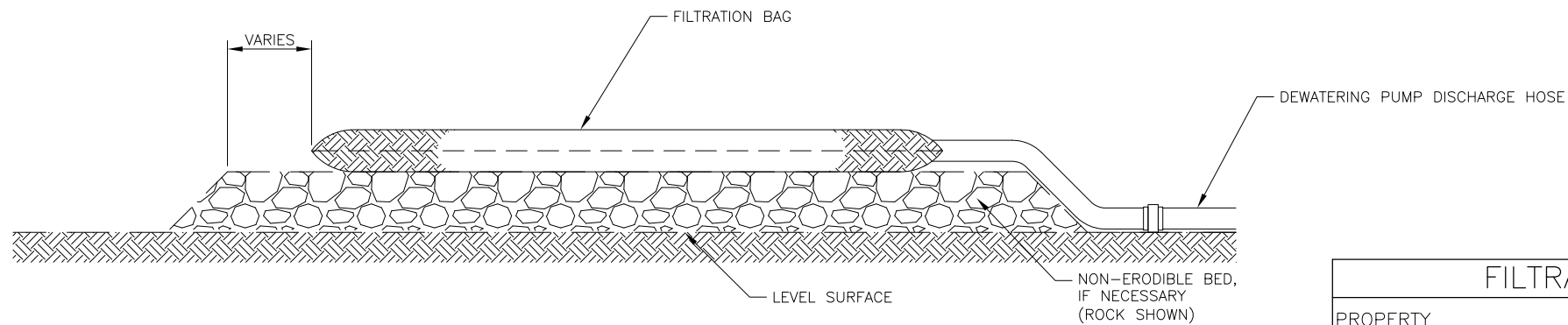
- 666 – Contained Silt Control System

## Drawing

- BMP-07.00 Contained Silt Control System



PLAN



SECTION A-A

PUMPED SILT CONTROL SYSTEM  
NOT TO SCALE

CONTAINED SILT CONTROL SYSTEM NOTES:  
MATERIALS  
FILTRATION BAG: SEE FILTRATION BAG REQUIREMENTS TABLE.

DISCHARGE HOSE

STRAPPING: HIGH-STRENGTH STRAPPING TO HOLD HOSE IN PLACE.

NON-ERODIBLE BED: WELL GRADED CLEAN 4-INCH MINUS ROCK, STRAW, OR OTHER NON-ERODIBLE BARRIER.

INSTALLATION

1. PROVIDE A LEVEL AREA SUCH THAT THE DISCHARGE WILL NOT CAUSE EROSION.
2. IF NECESSARY, PLACE A NON-ERODIBLE BED WITH AN APRON ON ALL SIDES OF THE FILTRATION BAG.
3. ENSURE THE AREA DOES NOT HAVE MATERIAL THAT MIGHT PUNCTURE THE FILTRATION BAG.
4. LAY FILTRATION BAG FLAT ON THE GROUND OR BED.
5. SECURE THE DISCHARGE HOSE WITH HIGH-STRENGTH STRAPPING.
6. CONNECT THE DISCHARGE HOSE TO THE FILTRATION BAG.

INSPECTION

3. INSPECT FABRIC FOR TEARS, PUNCTURES, FRAYING, WEATHERING, AND COMPROMISED INTEGRITY.
4. CHECK FOR FABRIC BLOCKAGE, BLINDING OR A REDUCTION IN THE AMOUNT OF CLEAN WATER BEING DISCHARGED.
5. CONFIRM THAT THE HOSE IS SECURE.
6. CHECK FOR SIGNS OF EXCESSIVE LEAKAGE AROUND THE DISCHARGE HOSE.
7. LOOK FOR EVIDENCE OF SEDIMENT OR EROSION AROUND THE SYSTEM.
8. LOOK FOR SIGNS OF INADEQUATE PROTECTION OF OFF-SITE SENSITIVE AREAS DUE TO DISCHARGES FROM THE FILTRATION BAG.
9. CHECK FOR CHANNEL FORMATION AROUND THE SYSTEM.

10. INSPECT THE CAPACITY OF THE FILTRATION BAG.

MAINTENANCE

1. REPLACE DAMAGED FILTRATION BAGS.
2. REPLACE BAG WHEN IT NO LONGER FILTERS SEDIMENT OR PASSES WATER AT A REASONABLE RATE.
3. REPLACE BAG WHEN IT BLINDS OUT AND CLEAN DISCHARGE IS REDUCED BY AN ESTIMATED 50% TO MINIMIZE POTENTIAL FOR PRODUCT FAILURE AND UNPLANNED DISCHARGE.
4. REPAIR EROSION AND CHANNELS AND CORRECT THE SITUATION CAUSING THESE TO OCCUR.

REMOVAL

1. PLACE AN ENERGY DISSIPATION DEVICE PRIOR TO DISCONNECTING THE HOSE.
2. ALLOW THE FILTRATION BAG TO DRAIN AND ENSURE THE PRESSURE HAS DROPPED BEFORE DISCONNECTING INTAKE AND DISCHARGE HOSES AFTER THE DISTURBED AREA IS PERMANENTLY STABILIZED, EXCAVATION DEWATERING HAS CEASED, OR THE PUMPED SILT CONTROL SYSTEM IS NO LONGER NEEDED.
3. EITHER REMOVE THE SEDIMENT LADEN BAG AND DISPOSE OF PROPERLY, OR OPEN THE FILTRATION BAG, SPREAD THE SEDIMENT MIX WITH ON-SITE SOIL AND SEED, AS DIRECTED BY THE PLANS.
4. REGRADE AND SEED OR PERMANENTLY STABILIZE REMAINING DISTURBED AREAS.
5. AVOID DAMAGE TO SENSITIVE AREAS (E.G. WETLAND OR WATERS OF THE U.S.).

FILTRATION BAG REQUIREMENTS

PROPERTY	TEST	VALUE
GRAB BREAKING LOAD, LB, 1-INCH GRIP MINIMUM, IN EACH DIRECTION.	ASTM D 4632	255
WATER FLOW RATE, GAL PER MINUTE/SQ FT MINIMUM AND MAXIMUM AVERAGE ROLL VALUE.	ASTM D 4491	80-200
PERMITTIVITY, SEC-1 MINIMUM.	ASTM D 4491	1
APPARENT OPENING SIZE, INCHES MAXIMUM AVERAGE ROLL VALUE.	ASTM D 4751	0.0083
ULTRAVIOLET RESISTANCE, PERCENT MINIMUM RETAINED GRAB BREAKING LOAD, 500 HOURS.	ASTM D 4355	70

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CONTAINED SILT CONTROL SYSTEM

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## **BMP 08.00. Culvert Inlet Protection**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Culvert Inlet Protection is used to trap sediment and reduce the amount of sediment entering a culvert.

#### *Description*

Culvert Inlet Protection is a low barrier, similar to a check dam, placed up-gradient of a culvert inlet to temporarily impound water and trap sediment while still allowing flow to enter the culvert. There are several types of temporary barriers applicable for different conditions:

- Geotextile-wrapped foam barriers
- Sand bags or gravel-filled sand bags
- Fiber rolls
- Geotextile-wrapped wire cage barrier

#### *Other Names*

Filter Inlet.

#### *Applicability*

Culvert Inlet Protection is applicable when there is potential for sediment to be transported to and through the culvert. Placement in the flowline is applicable for culverts conveying runoff or project drainage that must remain operational before permanent stabilization of the disturbed area. Placement above (all the way around) a culvert inlet is applicable when earth disturbing activities are occurring upslope of the inlet, to prevent sediment and runoff from entering the culvert inlet from above. Culvert Inlet Protection is not generally placed in the flowline of culverts conveying stream flow, since the purpose of the best management practice (BMP) is to treat run-off before it reaches receiving waterbodies such as streams. If placement in the flowline of streams is required, applicable permits must be obtained.

#### *Selection Considerations*

- Culvert Inlet Protection should be sited and constructed in a manner that will facilitate cleanout and disposal of trapped sediment.

- Culvert Inlet Protection should be constructed in a manner that will allow flow to pass and minimize ponding after the run-off has ceased.
- Blocking the inlet can cause flooding affecting streets and the construction area. Where flooding would cause a hazard, consider where overflow will go in extreme events and provide emergency overflows with additional treatment.
- Slope Gradient: The slope of the ditch discharging to the culvert inlet should not exceed 5 percent or flow velocity exceeding 2.5 to 3 cubic feet per second. The steeper the slope or the higher the velocity and shear stress, the larger the particle diameter that can be transported. The flatter the slope and the slower the flow, the longer the travel distance and time behind the barrier, allowing for sediment to settle. If Culvert Inlet Protection is required on steeper grades, consider using a series of barriers or a widened channel to provide velocity reduction or barriers of greater depth to lengthen the settling distance.
- Inlet protection should extend all the way around the inlet when upgradient slopes are not stabilized.
- Consider the effects if the barrier were to fail when water is ponded. Provide additional downstream protection if warranted.

#### *Design*

*Drainage Area:* The area of the construction drainage area to the culvert inlet should not exceed 1-acre. The total drainage area to the inlet may be larger than 1-acre, provided that the additional area is vegetated and/or permanently stabilized and that the spillway and ponding area is sized to adequately treat, impound, and convey the runoff from the tributary area.

*Depth:* Provide a temporary minimum ponding depth of 6 to 8 inches. The design must specify fiber rolls of adequate diameter, foam barriers, or sandbags of adequate thickness to provide the minimum ponding depth, and spillways with minimum elevations and width must be provided to limit the maximum ponding depth.

### *Relationship to Other Erosion and Sediment Control Measures*

Erosion control measures in the contributing areas must be in place to minimize the amount of sediment that must be treated at inlets. Culvert Inlet Protection is installed as a secondary measure to remove residual sediment that was not removed by other measures such as check dams, grassed swales, and sediment traps.

### *Common Failures or Misuses*

- Sediment accumulation resulting in reduced settling capacity.
- Improper installation, resulting in sediment bypassing filter and entering the culvert.
- Tearing, undermining, or collapsing of the barrier, resulting in sediment entering the culvert.

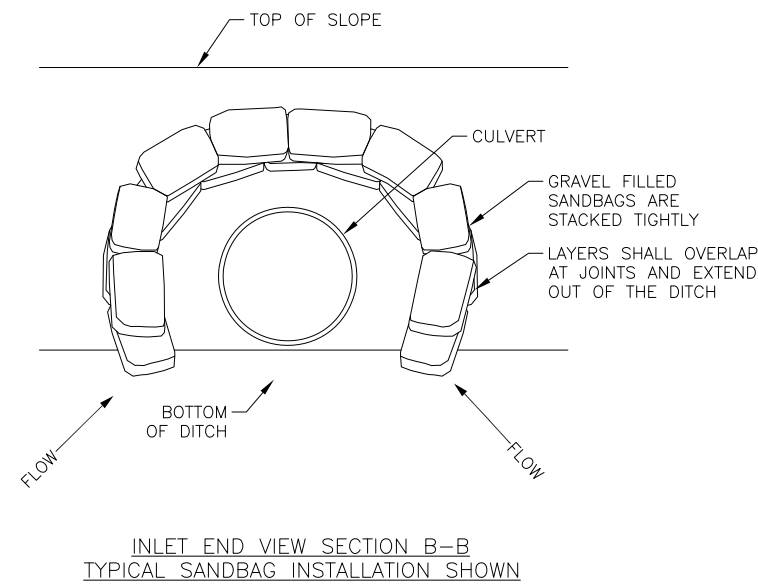
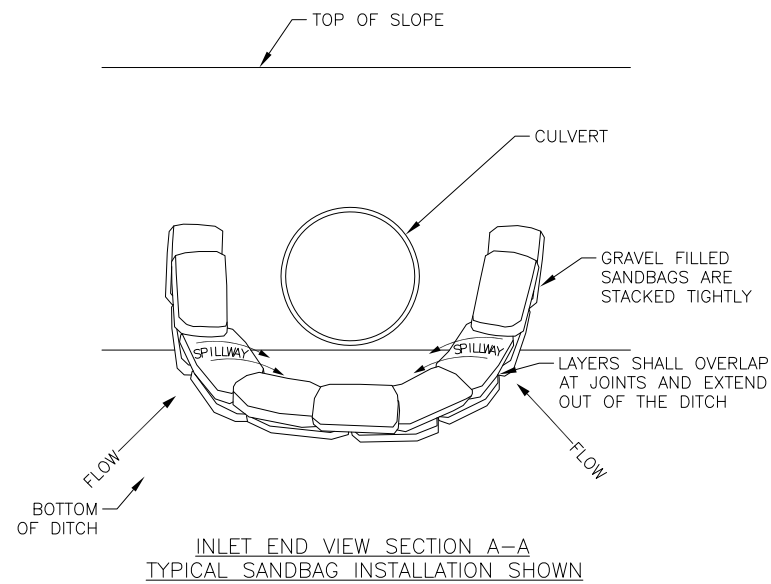
### SPECIFICATIONS

#### Standard Specification

- 667 – Culvert Inlet Protection

#### Drawing

- BMP – 08.00 Culvert Inlet Protection



CULVERT INLET PROTECTION NOTES:

MATERIALS

BARRIER MATERIALS:

1. PREFABRICATED BARRIER SYSTEM, AS SHOWN ON DRAWING BMP-13.00.
2. SANDBAG BARRIER, CONSISTING OF TIGHTLY WOVEN BURLAP OR WOVEN GEOTEXTILE BAG MATERIAL SUFFICIENTLY DURABLE TO REMAIN INTACT FOR THE TIME INTENDED. BAGS 2/3 FULL OF GRAVEL OR SAND WITH A GRADATION SUCH THAT NO FINE SEDIMENT PASSES THROUGH THE BAG. IF THE SANDBAGS ARE NEEDED FOR MORE THAN ONE SUMMER SEASON, PROVIDE BAG MATERIAL THAT HAS ULTRAVIOLET STABILITY OF AT LEAST 70% IN CONFORMANCE WITH ASTM D4355 REQUIREMENTS. SECURELY CLOSE THE SANDBAGS.

3. FIBER ROLL, AS SHOWN ON DRAWING BMP-10.00, 8 INCHES MINIMUM DIAMETER.
4. COMPOST SOCK, AS SHOWN ON DRAWING BMP-05.00.

INSTALLATION

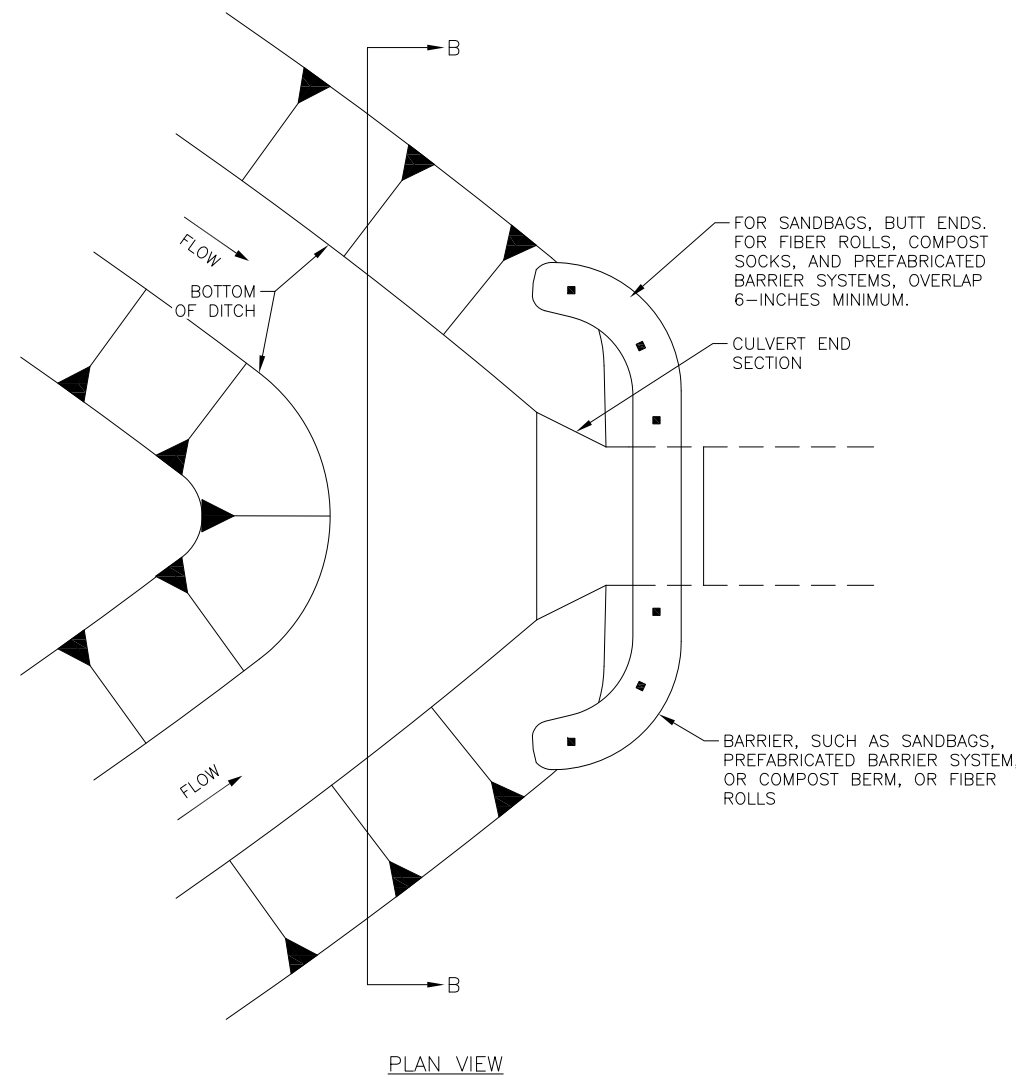
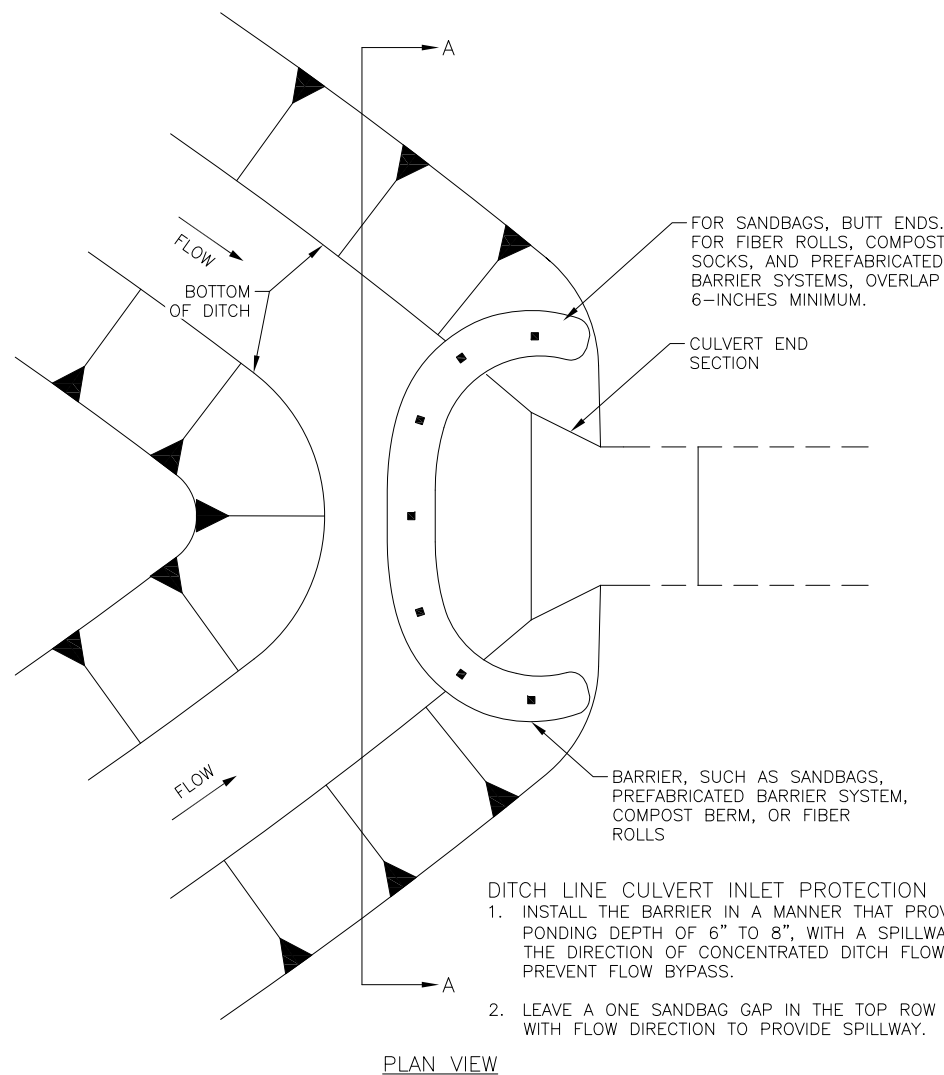
1. INSTALL WHERE INDICATED IN THE PLANS OR WHERE APPROVED BY THE ENGINEER.
2. ASSURE THAT BARRIER MAKES FULL CONTACT WITH SOIL ALL AROUND THE INLET.
3. IF PROTECTING BOTH DITCHLINE AND TOP OF PIPE, THE PROTECTION BARRIER CAN BE A SINGLE CONTINUOUS CIRCLE.
4. IN ADDITION:
  - a. PREFABRICATED BARRIER SYSTEM - ANCHOR WITH WIRE STAPLES ON SOIL, OR ADHESIVE ON PAVEMENT. OVERLAP 6 INCHES.
  - b. SANDBAG BARRIER - LAYER AND OVERLAP AT JOINTS.
  - c. FIBER ROLL - TRENCH A MINIMUM OF 2 INCHES. SEE STAKING REQUIREMENTS ON DRAWING BMP-10.00.
  - d. COMPOST SOCK - SEE STAKING REQUIREMENTS ON DRAWING BMP-05.00. STAKING REQUIRED WHEN PLACED WITHIN FLOWLINE/DITCH.

INSPECTION

1. CONFIRM THAT BARRIERS ARE IN FULL CONTACT WITH THE SOIL AND THAT BYPASS ROUTES ARE NOT PRESENT.
2. INSPECT FOR SEDIMENT ACCUMULATION, DISPLACEMENT, AND STRUCTURAL DAMAGE.

MAINTENANCE

1. REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES ONE-THIRD OF THE DESIGN DEPTH OF SPILLWAY.
2. RESTORE STRUCTURE TO ITS ORIGINAL DIMENSIONS AND FULL CONTACT WITH SOIL AROUND THE INLET AS SOON AS PRACTICABLE.
3. REPAIR ANY STRUCTURAL DAMAGE, INCLUDING REPLACING DAMAGED SANDBAGS, AS SOON AS PRACTICABLE.



DITCH LINE CULVERT INLET PROTECTION NOTES:

1. INSTALL THE BARRIER IN A MANNER THAT PROVIDES PONDING DEPTH OF 6" TO 8", WITH A SPILLWAY IN THE DIRECTION OF CONCENTRATED DITCH FLOW TO PREVENT FLOW BYPASS.
2. LEAVE A ONE SANDBAG GAP IN THE TOP ROW IN LINE WITH FLOW DIRECTION TO PROVIDE SPILLWAY.

DITCH LINE CULVERT INLET PROTECTION  
NOT TO SCALE

TOP OF PIPE CULVERT INLET PROTECTION  
NOT TO SCALE

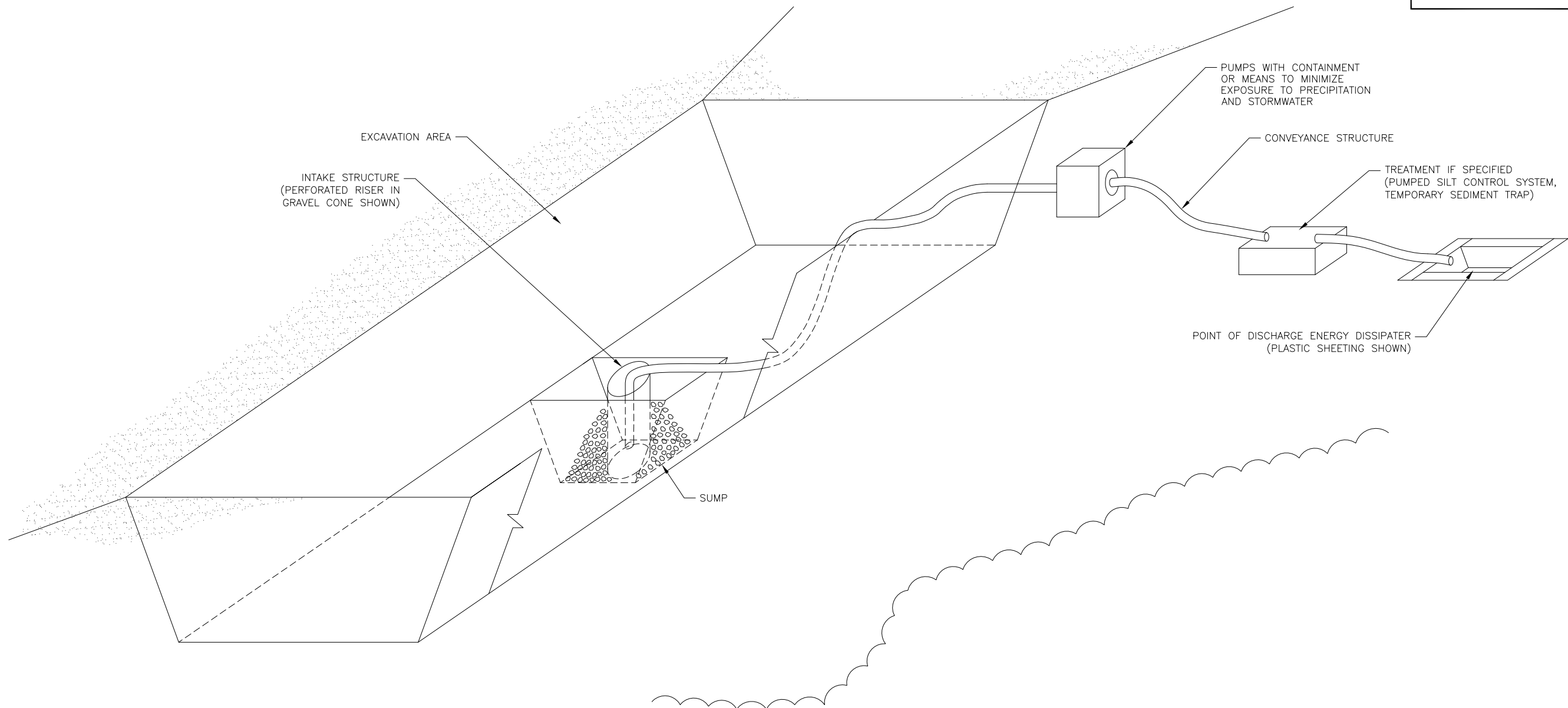
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State of Alaska DOT&PF

CULVERT INLET PROTECTION

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EXCAVATION DEWATERING  
NOT TO SCALE

EXCAVATION DEWATERING NOTES:

MATERIALS

**PUMP:** SIZED FOR DESIGN FLOW IN CONTRACT, INTAKE LINE, FITTINGS, AND NOZZLES.

**INTAKE STRUCTURES:** RISERS, SCREENS, GRAVEL CONES, GRAVEL FILTER BERMS, GEOTEXTILE, OR EQUIVALENT,

**CONVEYANCE SYSTEM:** FLEXIBLE HOSE, WITH PROPER FITTINGS OR EQUIVALENT.

**ENERGY DISSIPATER:** PLASTIC SHEETING, RIPRAP, SANDBAGS, T-BAR SPREADER, OR EQUIVALENT.

**TREATMENT:** UPLAND VEGETATIVE AREA, PUMPED SILT CONTROL SYSTEM, OR TEMPORARY SEDIMENT TRAP.

INSTALLATION

1. INSTALL THE CONVEYANCE STRUCTURE. FOR PIPED CONVEYANCE, ENSURE THAT IT IS ADEQUATELY SECURED AGAINST MOVEMENT DURING PUMPING.
2. PLACE THE PUMP IN AN AREA DESIGNED FOR ITS USE AND OPERATION.
3. INSTALL SPILL PREVENTION BMPS PRIOR TO OPERATION.
4. INSTALL THE ENERGY DISSIPATER.
5. CONNECT THE CONVEYANCE STRUCTURE TO THE DOWNSTREAM DISCHARGE POINT.

INSPECTION

1. WHEN PUMPING, MONITOR PUMPS AND INTAKE AND DISCHARGE POINTS.
2. INSPECT THE CONVEYANCE STRUCTURE FOR LEAKS, EROSION, OR OTHER DEFECTS.
3. INSPECT THE TREATMENT CONTROLS FOR BYPASS, CLOGGING, AND SIGNS OF INADEQUATE TREATMENT.
4. INSPECT DISCHARGE POINT FOR EROSION OR FAILURE OF THE ENERGY DISSIPATION MATERIAL.
5. INSPECT THE EQUIPMENT AREA FOR PROPERLY STORED FUEL AND OTHER POTENTIALLY HAZARDOUS SUBSTANCES.

MAINTENANCE

1. REINFORCE, REPAIR, OR RESTORE ANY PORTION OF THE TREATMENT CONTROLS, CONVEYANCE SYSTEM, OR ENERGY DISSIPATER.

REMOVAL

1. REMOVE THE INTAKE HOSE.
2. REMOVE THE ENERGY DISSIPATER AND TREATMENT CONTROLS, IF THEY ARE NOT PART OF THE PERMANENT SITE FEATURES.
3. REMOVE THE CONVEYANCE SYSTEM.
4. AS REQUIRED, BACKFILL OR REGRADE THE CONVEYANCE SYSTEM ALIGNMENT AND TREATMENT AREA AND RESTORE TO ORIGINAL CONTOURS.
5. REGRADE AND SEED OR PERMANENTLY STABILIZE ALL DISTURBED AREAS.

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EXCAVATION  
DEWATERING

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## **BMP 10.00.a. Fiber Rolls for Erosion Control**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of Fiber Rolls for Erosion Control is to shorten the slope and help to slow, filter, and spread overland flows. They capture sediment, organic matter, and seeds that might otherwise be washed downslope.

#### *Description*

Fiber Rolls are long rolls of material such as wood excelsior, rice or wheat straw, flax, coconut fibers, or compost, which is rolled or bound in a tight tubular roll and wrapped in plastic or biodegradable netting. They are typically about 8 inches in diameter and under 30 feet long.

They may come pre-fabricated or they can be fabricated on-site.

#### *Other Names*

Wattles, Straw Wattles, Straw Rolls, Coir Logs, Excelsior Log, Straw Log, Filter Logs, Fiber Logs.

#### *Applicability*

Fiber Rolls can be applied to steep or long slopes and slopes that are susceptible to freeze/thaw activity, sheet and rill erosion, or dry ravel. They can be placed along the toe, top, face, and at grade-breaks on disturbed or erodible slopes. They can be used as a temporary berm to direct flow around exposed soils or to a sediment trap and as a check dam in unlined ditches. They can be used at other locations at the project site for sediment control.

#### *Selection Considerations*

- Use in areas of low shear stress.
- Avoid use on slopes that could build up ice; for instance, where seepage occurs.
- They are effective for one to two seasons.
- Fiber Rolls can be staked to the ground using willow cuttings to increase the revegetation effort. Since the fiber roll will retain moisture, it will provide a good site for the willow cuttings to root. The Alaska Department of Fish and Game (ADF&G) has prepared guidance for willow cuttings and dormant cuttings in the

*Streambank Revegetation and Protection: A Guide for Alaska* at:

<http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.staking>

and

<http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.cuttings>

- The quantity of sediment that a roll can capture prior to maintenance is limited to one-half the exposed height of the roll.
- Rolls will be difficult to move once they are saturated. Determine whether Fiber Rolls must be removed at the end of the project based on the use of the area. If removal is required, specify in the plan set and require removal of netting upon final stabilization.

#### *Relationship to Other Erosion and Sediment Control Measures*

Fiber Rolls are best used in combination with seeding, mulch, hydraulic erosion control products (HECPs), and/or rolled erosion control products (RECPs). They can be used to stabilize slopes until the permanent vegetation becomes established.

#### *Common Failures or Misuses*

- Unless they are placed in a trench, run-off can flow underneath Fiber Rolls and cause failure.
- Unless they are properly staked, Fiber Rolls can be transported by high flows.
- Water can flow between Fiber Rolls if they are not overlapped.
- Fiber Rolls must be placed perpendicular to flow (parallel to the slope contour).
- Fiber Rolls will not work if the slope is slumping, creeping, or sliding.

### SPECIFICATIONS

#### Standard Specification

- 669 – Fiber Rolls for Erosion and Sediment Control

#### Drawings



- BMP-10.00 Fiber Rolls for Erosion and Sediment Control
- BMPs -31.00, 32.00 and 33.00 Temporary Check Dam

## BMP 10.00.b. Fiber Rolls for Sediment Control

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of Fiber Rolls for Sediment Control is to trap sediment and prevent it from being transported out of the project area, to another area, or to waters of the U.S.

#### *Description*

Fiber Rolls are long rolls of material such as wood excelsior, rice or wheat straw, flax, coconut fibers, or compost, which is rolled or bound in a tight tubular roll and wrapped in plastic or biodegradable netting. They are typically about 8 inches in diameter and under 30 feet long.

They may come pre-fabricated or they can be fabricated on-site.

#### *Other Names*

Wattles, Straw Wattles, Straw Rolls, Coir Logs, Excelsior Log, Straw Log, Filter Logs, Fiber Logs.

#### *Applicability*

Fiber Rolls can be placed at the perimeter of a project, below the toe of exposed and erodible slopes, and around temporary stockpiles. They may also be used for inlet protection. They can be used at other locations at the project site for erosion control.

#### *Selection Considerations*

- Use in areas of low shear stress.
- Avoid use on slopes that could build up ice; for instance, where seepage occurs.
- They are effective for one to two seasons.
- Fiber Rolls can be staked to the ground using willow cuttings to increase revegetation efforts. Since the Fiber Roll will retain moisture, it will provide a good site for the willow cuttings to root. The Alaska Department of Fish and Game has prepared guidance for willow cuttings and dormant cuttings in the *Streambank Revegetation and Protection: A Guide for Alaska* at:  
<http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.staking>

and

<http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.cuttings>

- The quantity of sediment that a roll can capture prior to maintenance is limited to one-half the exposed height of the roll.
- Rolls will be difficult to move once they are saturated. Determine whether Fiber Rolls must be removed at the end of the project based on the use of the area. If removal is required, specify in the plan set and require removal of netting upon final stabilization.

#### *Relationship to Other Erosion and Sediment Control Measures*

Fiber Rolls are best used in combination with seeding, mulch, hydraulic erosion control products (HECPs), and/or rolled erosion control products (RECPs).

- Fiber Rolls can be used in place of silt fence. The advantage of fiber rolls over silt fence is that installation is much easier, they do not have to be removed, and hydroseeding can be done after their installation.
- Compost socks can be used in place of Fiber Rolls and do not require trenching. Compost socks are also heavy enough that they can be placed on paved surfaces.
- A prefabricated barrier system can be used in place of fiber rolls and requires a smaller trench. A prefabricated barrier system can also be adhered to paved surfaces.

#### *Common Failures or Misuses*

- Unless they are placed in a trench and have tamped backfill in the trench on the uphill side, runoff can flow underneath Fiber Rolls and cause failure.
- Unless they are properly staked, Fiber Rolls can be transported by high flows.
- Water can flow between Fiber Rolls if they are not overlapped.

- Fiber Rolls must be placed perpendicular to flow (parallel to the slope contour).
- Fiber Rolls will not work if the slope is slumping, creeping, or sliding.

### SPECIFICATIONS

#### Standard Specification

- 669 – Fiber Rolls for Erosion and Sediment Control

#### Drawings

- BMP-10.00 Fiber Rolls for Erosion and Sediment Control
- BMP-08.00 Culvert Inlet Protection
- BMPs -25.00, 26.00, 27.00, 28.00 and 29.00 Storm Drain Inlet Sediment Protection

**FIBER ROLL GENERAL NOTES:**

**MATERIALS**

**FIBER ROLLS:** THE NETTING MAY BE UV-DEGRADABLE POLYPROPYLENE, BIODEGRADABLE BURLAP, JUTE OR COIR. THE FILLINGS MAY BE STRAW, FLAX, RICE, OR COCONUT-FIBER. MINIMUM DIAMETER OF 6 INCHES.

**STAKES:** 1-INCH BY 1-INCH WOODEN STAKES 24 INCHES LONG (18 INCHES IF SOILS ARE ROCKY) OR 3/8-INCH REBAR WITH SAFETY CAPS OR 3/4-INCH TO 1 1/2-INCH DIAMETER LIVE WILLOW CUTTINGS. IF USING LIVE WILLOW CUTTINGS, DO NOT INSTALL ROPE.

**INSTALLATION**

1. PLACE FIBER ROLLS PERPENDICULAR TO FLOW AND PARALLEL TO THE SLOPE CONTOUR.
2. AT THE END OF THE ROLL, TURN THE END UPSLOPE TO PREVENT RUN-OFF FROM GOING AROUND THE ROLL END.

**INSPECTION**

1. ENSURE THAT THE ROLLS ARE IN CONTACT WITH THE SOIL AND THOROUGHLY ENTRENCHED.
2. LOOK FOR SCOURING UNDERNEATH THE ROLLS.
3. LOOK FOR SPLIT, TORN, UNRAVELING, OR SLUMPING FIBER ROLLS.
4. ENSURE EQUIPMENT HAS NOT DRIVEN OVER THE INSTALLED FIBER ROLLS.

**MAINTENANCE**

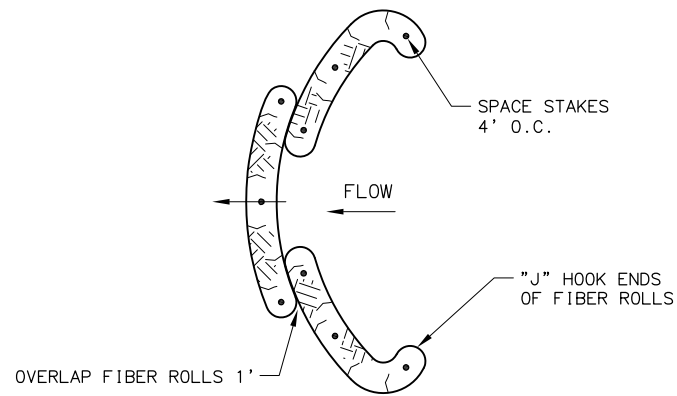
1. REPLACE DAMAGED SECTIONS OF FIBER ROLL.
2. REMOVE ACCUMULATED SEDIMENT UPSLOPE OF THE ROLL BEFORE IT REACHES ONE-HALF THE DISTANCE BETWEEN THE TOP OF THE FIBER ROLL AND THE GROUND SURFACE. WHEN PROTECTING A WATER BODY OR STORM DRAIN INLET, REMOVE ACCUMULATED SEDIMENT UPSLOPE OF THE ROLL WHEN IT REACHES ONE-THIRD OF THE DISTANCE BETWEEN THE TOP OF THE FIBER ROLL AND THE GROUND SURFACE.

**REMOVAL**

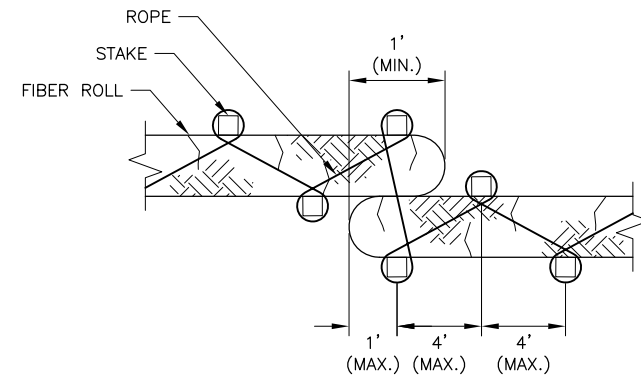
1. REMOVE FIBER ROLLS WHEN THE AREA IS STABILIZED OR WHEN THEY ARE NO LONGER NECESSARY.
2. COLLECT AND DISPOSE OF THE ACCUMULATED SEDIMENT.
3. REMOVE AND DISPOSE OF FIBER ROLLS.
4. FILL THE TRENCHES AND STAKE HOLES TO BLEND WITH THE ADJACENT GROUND AND REVEGETATE AS NECESSARY.

**RETENTION**

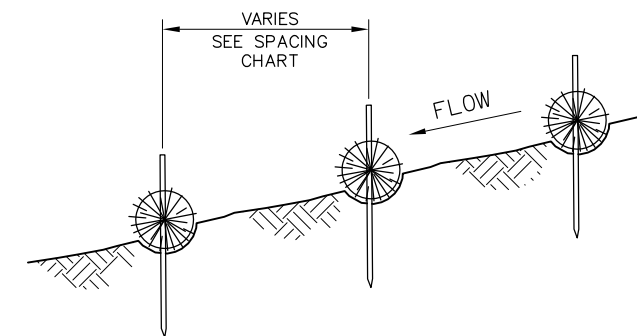
1. LEAVE FIBER ROLLS IN PLACE WHEN THE AREA IS STABILIZED OR WHEN THEY ARE NOT NECESSARY.
2. COLLECT AND DISPOSE OF THE ACCUMULATED SEDIMENT.
3. REMOVE AND DISPOSE OF THE NETTING, STAKES, AND ROPE.



**PLAN**



**PLAN**



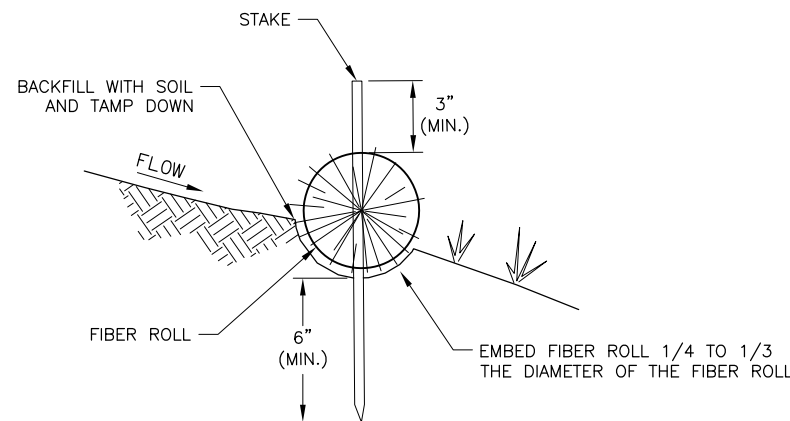
TYPICAL SPACING CHART	
SLOPE	SPACING (FEET)
1:1	10
2:1	20
3:1	30

**SLOPE INSTALLATION**

NOT TO SCALE

**SLOPE INSTALLATION NOTES:**

1. INSTALL ON A SLOPE TO SHORTEN THE SLOPE LENGTH.
2. START INSTALLATION DOWNSLOPE.
3. SPACE ROLLS ACCORDING TO THE SPACING CHART AND DECREASE SPACING ON MORE ERODIBLE SOILS AND INCREASE SPACING ON ROCKY SOILS.



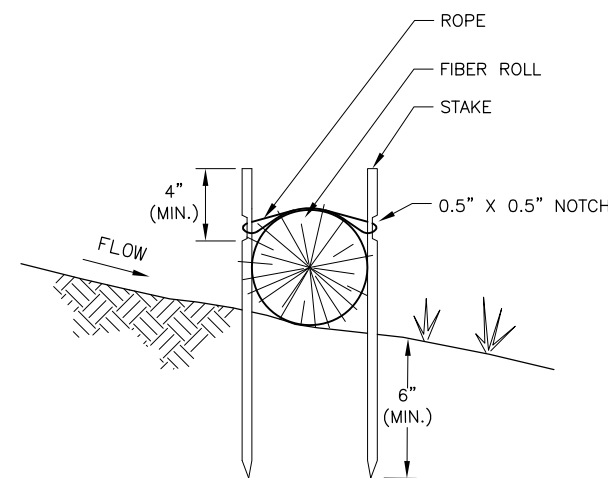
**SECTION**

**TRENCHED INSTALLATION**

NOT TO SCALE

**TRENCHED INSTALLATION NOTES:**

1. DIG TRENCHES AND PLACE FIBER ROLLS IN THE TRENCHES.
2. CURVE BACK THE UPSLOPE END OF THE FIBER ROLL IN A "J" HOOK.
3. SPREAD EXCAVATED MATERIAL EVENLY ALONG THE UPHILL SLOPE AND COMPACT USING HAND TAMPING OR OTHER METHODS.
4. STAKE THE ROLL EVERY 4 FEET AND WITHIN 1-FOOT OF THE ENDS. LEAVE 3 INCHES OF THE STAKE ABOVE THE ROLL.
5. DRIVE STAKES THROUGH THE MIDDLE OF THE FIBER ROLL.
6. IF REQUIRED, PILOT HOLES FOR THE STAKES MAY BE CREATED BY DRIVING A STRAIGHT BAR THROUGH THE ROLL.



**SECTION**

**ROPE INSTALLATION**

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**FIBER ROLLS FOR EROSION AND SEDIMENT CONTROL**

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## **BMP 11.00. Interception Ditch**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of an Interception Ditch is to intercept run-on and direct it to a stabilized area where it can be safely discharged.

#### *Description*

An Interception Ditch is a berm of compacted soil or an excavated swale, or combination berm and swale constructed across a slope.

#### *Other Names*

Interceptor Ditch, Crown Ditch, Interceptor Swale, Interceptor Dike, Water Bar.

#### *Applicability*

This measure should be used in construction areas where run-off can be intercepted and disposed of properly to control erosion, sedimentation, or flood damage. Interception Ditches may be either temporary or permanent and are used in variety of situations to provide storm water protection. When used above disturbed existing slopes or above cut or fill slopes, an Interception Ditch prevents run-off over the slope. Across unprotected slopes, it acts as slope breaks to reduce slope length. When used below slopes, it diverts excess run-off to stabilized outlets. It can also be used to divert sediment-laden water to sediment traps, to divert water around buildings or areas that are subject to damage from run-off, and at or near the perimeter of the construction area to prevent sediment from leaving the site. Prior to stabilization of disturbed areas, an Interception Ditch diverts water around the area to prevent erosion and maintain acceptable working conditions. Along paved surfaces, it conveys run-off to an appropriate discharge location.

#### *Selection Considerations*

- Berms to intercept and divert run-off should not be used where the drainage area exceeds 10 acres.
- Interception Ditches should be carefully designed where longitudinal ditch slopes are steeper than 10 percent.

- Provide check dams or riprap in ditches with steep slopes to decrease the velocity of stormwater.
- Provide energy dissipation measures at ditch outfalls.
- Ditches that become sediment laden may need supplemental BMPs, such as a sediment trap.
- The ditch must be sloped to provide positive drainage to the outlet.

#### *Design*

The location of the Interception Ditch should be determined by considering outlet conditions, topography, land use, soil type, and length of slope. The ditch should be designed for a minimum freeboard of 0.3 feet to one foot with the capacity of the 10-year peak run-off storm for a permanent structure and the 2-year, 24-hour peak run-off storm for a temporary structure.

#### *Relationship to Other Erosion and Sediment Control Measures*

Intercepted run-off should outlet to a stabilized area such as a sediment basin, detention or retention basin, or stabilized outlet, which should be established prior to introducing run-off from the Interception Ditch. An Interception Ditch can direct stormwater to a slope drain to convey water to a stabilized outlet. This measure is different from Temporary Diversion Conveyance because it is not for concentrated or stream flow.

#### *Common Failures or Misuses*

- Berm not properly compacted during construction, resulting in uneven settling.
- Ditch not properly sloped to the outlet.
- Construction traffic damage to the ditch.
- Sediment accumulation against berm/channel not removed periodically, resulting in berm not functioning properly.
- Excessively steep, unlined ditches resulting in erosion.

## SPECIFICATIONS

### Standard Specification

- 673 – Interception Ditch

### Drawing

- BMP-11.00 Interception Ditch

**INTERCEPTION DITCH NOTES:**

**MATERIALS**

**DITCH LINER:** AS SPECIFIED IN THE PLANS OR USE PLASTIC LINING.

**BERM:** SANDBAGS, COMPACTED SOIL, OR EQUIVALENT MATERIAL.

**ENERGY DISSIPATER:** RIPRAP OR SANDBAGS.

**INSTALLATION**

1. REMOVE AND PROPERLY DISPOSE OF ALL TREES, BRUSH, STUMPS, OR OTHER OBJECTIONABLE MATERIAL.
2. FILL AND COMPACT ALL DITCHES, SWALES, OR GULLIES THAT WILL BE CROSSED TO NATURAL GROUND LEVEL.
3. EXCAVATE, SHAPE, AND STABILIZE THE DITCH TO LINE, GRADE, AND CROSS SECTION AS REQUIRED IN THE PLANS.
4. COMPACT THE BERM TO PREVENT UNEQUAL SETTLEMENT AND TO PROVIDE STABILITY AGAINST SEEPAGE.
5. STABILIZE THE DITCH AND BERM AFTER INSTALLATION.
6. INSTALL ENERGY DISSIPATER.

**INSPECTION**

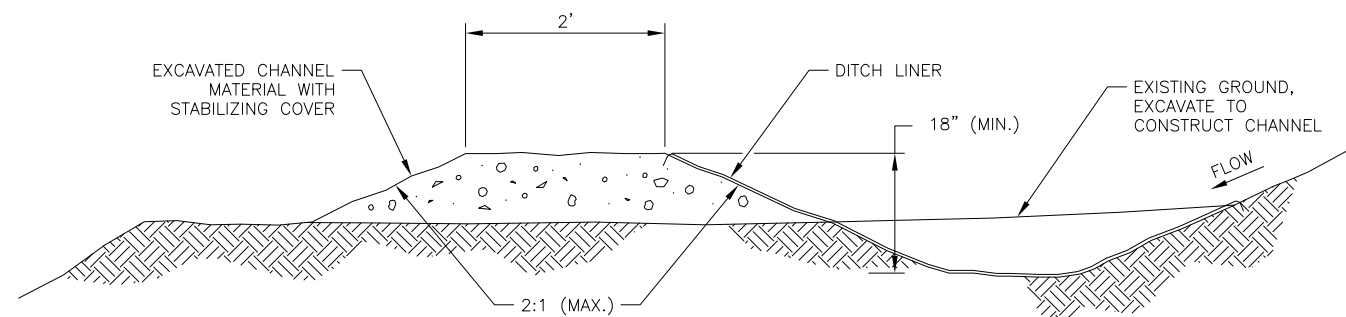
1. INSPECT DITCH FOR EROSION.
2. INSPECT DITCH FOR SEDIMENT ACCUMULATION AND DEBRIS.
3. INSPECT FOR WASHOUTS.

**MAINTENANCE**

1. REMOVE ANY SEDIMENT OR OTHER OBSTRUCTIONS FROM THE INTERCEPTION DITCH.
2. REPLACE RIPRAP AND DAMAGED LININGS AS NEEDED.
3. CHECK OUTLETS AND MAKE REPAIRS AS NECESSARY.

**REMOVAL**

1. AFTER DISTURBED AREA IS STABILIZED OR INTERCEPTION OF STORM WATER IS NO LONGER NEEDED, RESTORE THE DITCH TO EXISTING OR CONSTRUCTED GRADE FOR TEMPORARY INSTALLATIONS.
2. SEED AND MULCH DISTURBED AREA.



**INTERCEPTION DITCH**  
NOT TO SCALE

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## **BMP 12.00. Plastic Covering**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Plastic covering is used to temporarily protect soils, slopes, and stockpiles from erosion by wind or water.

#### *Description*

Plastic sheeting covers surfaces that are susceptible to erosion to provide temporary protection from the elements. The sheeting is keyed in at the top, overlapped at seams, and fastened or weighted down in a grid pattern.

#### *Other Names*

Visqueen, plastic sheeting.

#### *Applicability*

The applicability of plastic sheeting is limited to covering stockpiles or very small graded areas for urgent, short-term protective treatment (such as through one imminent storm event or for overwintering disturbed slopes) until alternative measures, such as seeding and mulching, can be installed. It is not recommended as cover for seeded slopes for more than two days. This temporary measure should only be used in conjunction with a sediment control (perimeter control) BMP.

#### *Selection Considerations*

Select plastic sheeting based on the expected functional longevity required to protect the stockpile or soil. Evaluate given the following limitations:

- Plastic sheeting is easily vandalized and torn, is subject to photo degradation, and must be disposed of in a landfill.
- Freezing temperatures weaken the sheeting and make it prone to tearing.
- Plastic sheeting results in 100% runoff, which may cause serious erosion problems in the areas receiving the runoff.
- Plastic prevents infiltration and soil saturation.

#### *Relationship to Other ESC Measures*

Plastic sheeting may be used temporarily before other stabilization measures, such as hydraulic

erosion control products (HECPs) or rolled erosion control products (RECPs).

#### *Common Failures or Misuses*

- Improper installation is a common problem with plastic sheeting. Plastic sheeting must be keyed in at the top of the slope to prevent undercutting.
- Installation upslope of steep and/or unstable slopes can lead to adverse effects from concentrated runoff.
- Allowing it to remain in place longer than its useful life. Plastic becomes brittle over time due to photo degradation and develops holes and tears.
- Improper weighting or too-wide spacing between weights can cause it to be blown off in the wind.

### SPECIFICATIONS

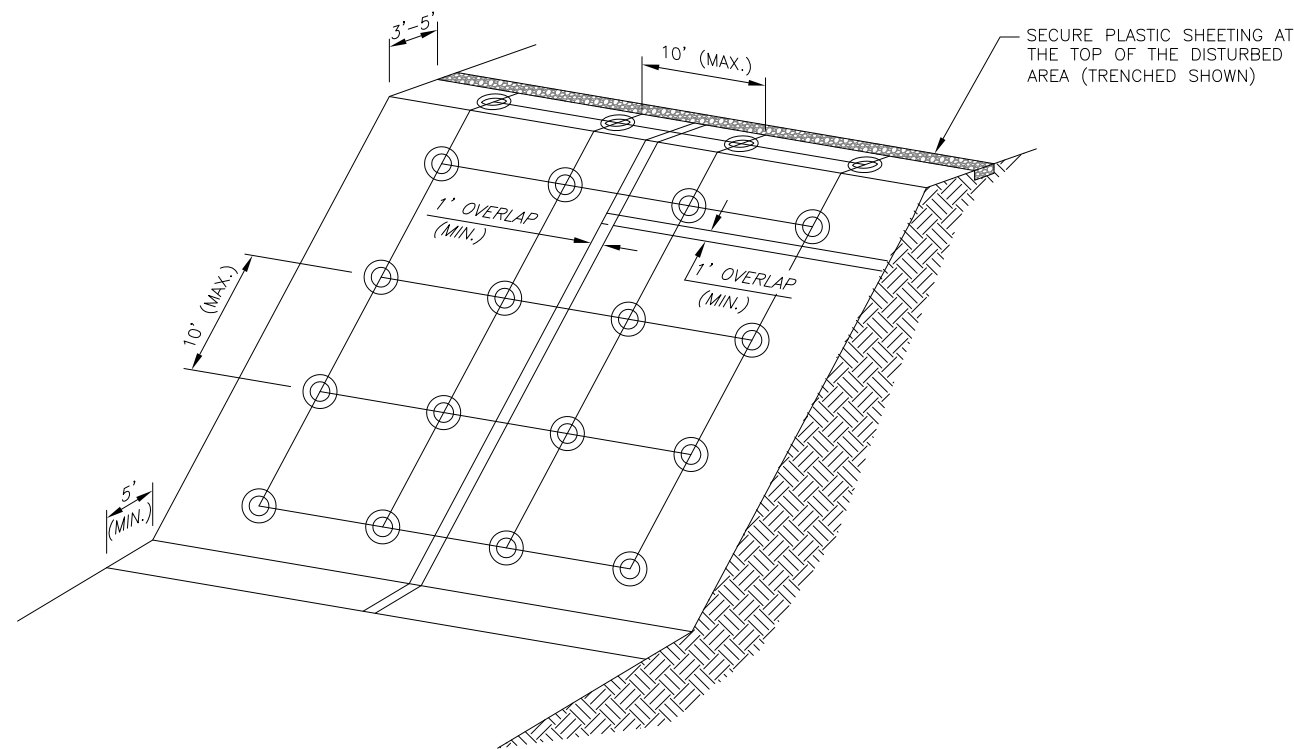
#### Standard Specification

- 674 – Plastic Covering

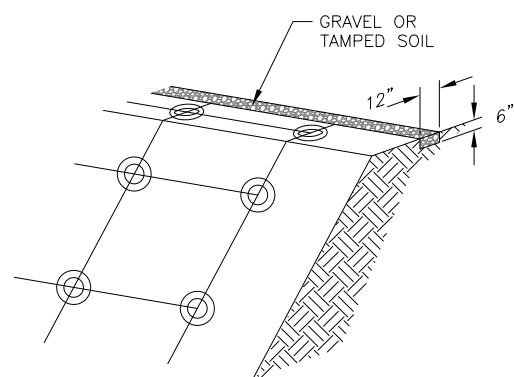
#### Drawing

- BMP-12.00 – Plastic Covering

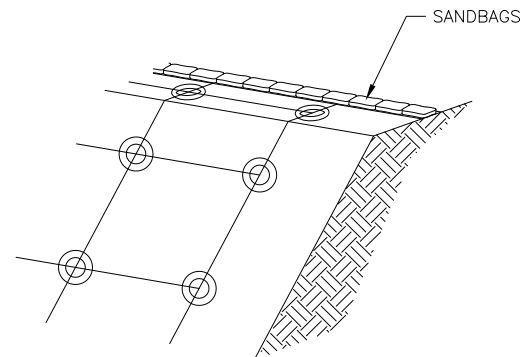




PERSPECTIVE



TRENCHED DETAIL



WEIGHTED DETAIL

PLASTIC COVERING  
NOT TO SCALE

PLASTIC COVERING NOTES:

MATERIALS

PLASTIC COVERING: PLASTIC COVERING SHALL MEET THE REQUIREMENTS OF ASTM D 4397 FOR POLYETHYLENE SHEETING HAVING A MINIMUM THICKNESS OF 6 MIL.

FASTENERS OR WEIGHTS: FASTENERS OR WEIGHTING OBJECTS, SUCH AS SANDBAGS, TIRES, OR OTHER SIMILAR MATERIALS.

INSTALLATION

1. INSTALL PLASTIC PARALLEL WITH THE SLOPE, NOT PERPENDICULAR. PLASTIC MAY BE INSTALLED PERPENDICULAR TO A SLOPE IF THE SLOPE LENGTH IS LESS THAN 10 FEET. OVERLAP UPHILL SHEET OVER DOWNHILL SHEET A MINIMUM OF 1-FOOT.
2. SECURE THE PLASTIC SHEETING AT THE TOP OF THE SLOPE BY KEYING INTO A TRENCH OR WEIGHT WITH A CONTINUOUS LINE OF SANDBAGS SO THAT NO WATER CAN FLOW UNDERNEATH.
3. INSTALL WEIGHTS ON ROPES OR FASTENERS IN A 10-FOOT MAXIMUM GRID, TO SECURE THE PLASTIC TIGHTLY AGAINST THE SOIL.
4. INSPECT WEIGHTS TO MAKE SURE THEY ARE STILL IN PLACE, REPLACE AS NEEDED OR ADD ADDITIONAL WEIGHT IF THERE IS NOT A SUFFICIENT AMOUNT ON THE SLOPE.
5. TAPE, FASTEN, OR WEIGHT SEAMS ALONG THEIR ENTIRE LENGTH WITH A MINIMUM OF 1-FOOT OF OVERLAP AT ALL SEAMS.
6. SECURE EDGES TO PREVENT WATER FROM ERODING GROUND UNDERNEATH AND WIND FROM LIFTING THE COVER.

INSPECTION

1. INSPECT SHEETING AFTER INSTALLATION AND ACCORDING TO ESTABLISHED SCHEDULES.
2. CHECK FOR EROSION, UNDERMINING, ANCHORAGE (KEYING AND EMBEDDING) FAILURE, TORN SHEETS, AND DETERIORATION.

MAINTENANCE

1. REPAIR FAILURES AS SOON AS PRACTICABLE.
2. IF WASHOUT OR BREAKAGES OCCUR, REPAIR DAMAGE TO THE SLOPE AND REINSTALL THE MATERIAL AS SOON AS PRACTICABLE.

REMOVAL

1. REMOVE PLASTIC SHEETING AND WEIGHTS PRIOR TO STABILIZING THE AREA OR WHEN CONSTRUCTION ACTIVITY IS COMPLETED.
2. AFTER REMOVAL, FILL TRENCHES TO BLEND WITH THE ADJACENT GROUND AND REVEGETATE, AS NECESSARY.

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## **BMP 13.00. Prefabricated Barrier System**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of a Prefabricated Barrier System is to slow and spread overland flows and to trap sediment and prevent it from being transported out of the project area to another area or to waters of the U.S.

#### *Description*

Prefabricated Barrier Systems are prefabricated devices with a foam core enclosed in woven geotextile fabric. Each unit is a minimum of 5 inches tall after installation and at least 4 feet in length. They have an apron that extends beyond both sides of the base of the foam core. The sleeve at one end allows attachment of additional sections as needed.

#### *Other Names*

Foam Logs, Geotextile Encased Check Dam, Geotextile Triangular Dam.

#### *Applicability*

Prefabricated Barrier Systems can be placed at the perimeter of a project, below the toe of exposed and erodible slopes, and around temporary stockpiles. They can be applied to steep or long slopes and slopes that are susceptible to freeze/thaw activity, sheet and rill erosion, or dry ravel. They can be placed along the toe, top, face, and at grade-breaks on disturbed or erodible slopes. They can be used as a temporary berm to direct flow around exposed soils, or to a sediment trap. They can be used as a check dam in unlined ditches, or as storm drain inlet protection.

#### *Selection Considerations*

- Flexibility of the materials in Prefabricated Barrier Systems allows them to conform to all channel configurations.
- Prefabricated Barrier Systems have the ability to interlock to form longer barriers without water flowing between the individual units.
- Prefabricated Barrier Systems can be secured using a combination of nails, solvent-free adhesives, or gravel-filled bags depending on the surface.

- When used below disturbed areas subject to sheet and rill erosion drainage, the area must be no greater than 0.25-acre per 100 lineal feet of barrier.
- Slope behind the barrier should be no steeper than 2H:1V.
- Prefabricated Barrier Systems can be reused depending on the amount of wear.
- The quantity of sediment that a barrier can capture is limited.

#### *Design*

Show precisely where to place this type of barrier on the plan sheets. Be cautious about the concentrated flow that develops at the end of the barrier. Do not place them where the concentrated flow will do damage and include provisions for energy dissipation or treatment, as appropriate.

#### *Relationship to Other Erosion and Sediment Control Measures*

Prefabricated Barrier System can be used in combination with other barriers.

- Prefabricated Barrier Systems can be used in place of silt fence. The advantage of Prefabricated Barrier Systems over silt fence is that installation may be easier and may be less damaging to existing vegetation.
- Compost socks can be used in place of Prefabricated Barrier Systems and are heavy enough that they can be placed on paved surfaces without the use of adhesive products.
- A Prefabricated Barrier System can be used in place of fiber rolls and requires a smaller trench. A Prefabricated Barrier System can also be adhered to paved surfaces.

#### *Common Failures or Misuses*

- Use where flow volume or velocity inhibit best management practice (BMP) function.
- Use as a filter.
- Piercing the barrier's core with nails or stakes.

- Unless properly secured to the ground, runoff can flow underneath the barrier and cause failure.
- Unless properly secured, barriers can be dislodged or transported by high flows.
- Prefabricated Barrier System must be placed perpendicular to flow (parallel to the slope contour).

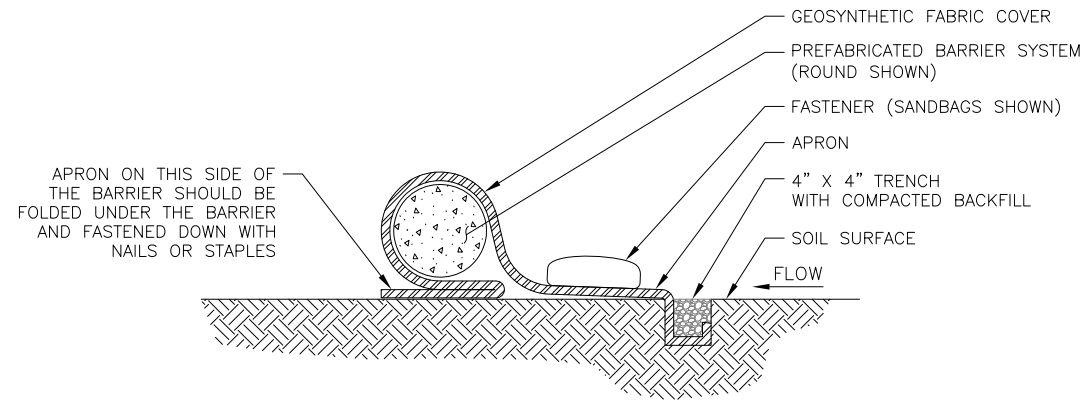
### SPECIFICATIONS

#### Standard Specifications

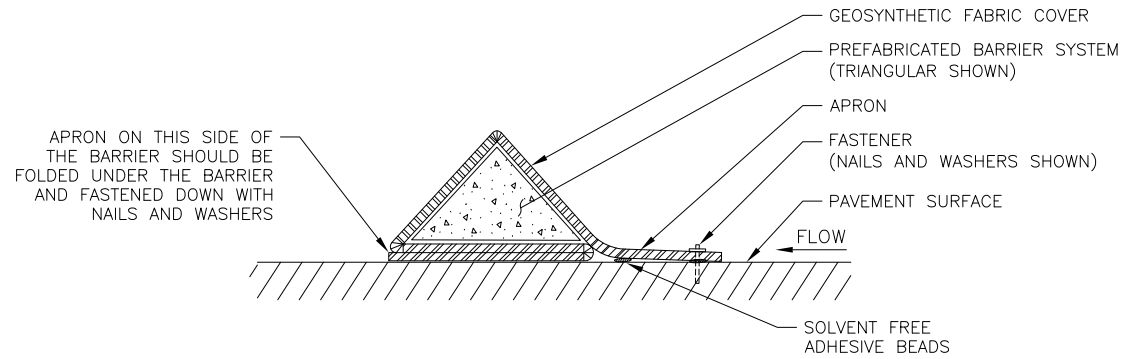
- 675 – Prefabricated Barrier System

#### Drawings

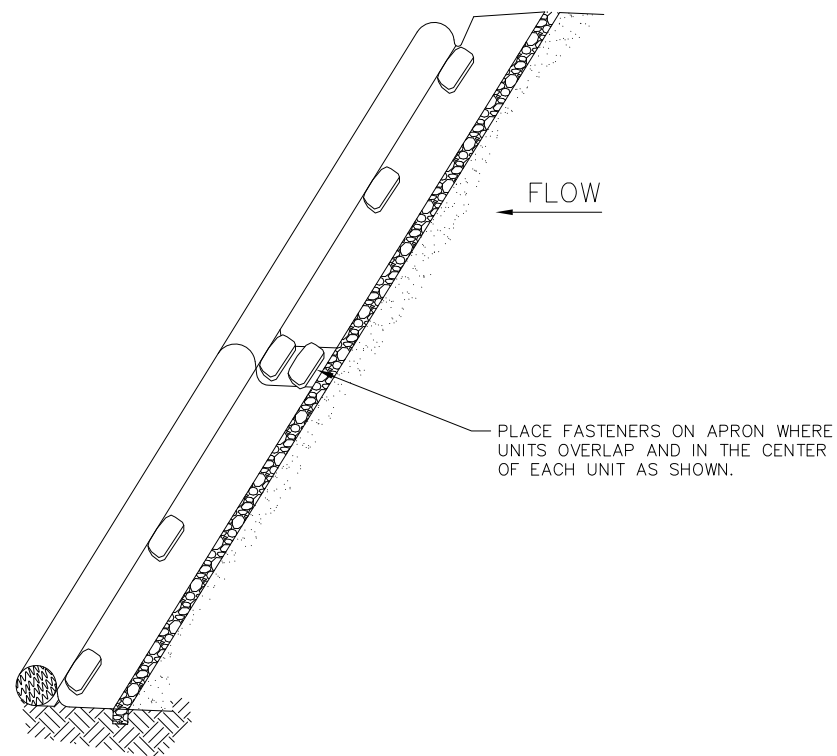
- BMP-13.00 Prefabricated Barrier System
- BMP-31.00, BMP-32.00, BMP-33.00  
Temporary Check Dam
- BMP-21.00, BMP-22.00 Slope Drain
- BMP-10.00 Fiber Rolls for Erosion and  
Sediment Control
- BMP-25.00, BMP-26.00, BMP-27.00, BMP-  
28.00, BMP-29.00 Storm Drain Inlet  
Sediment Protection



SECTION



SECTION



PLAN

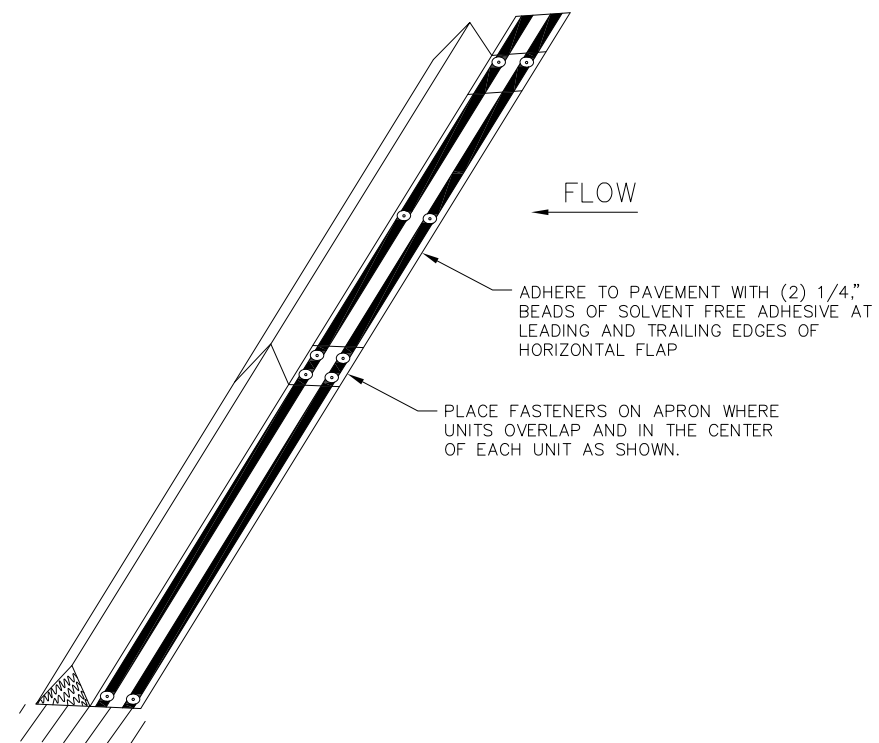
SOIL INSTALLATION  
NOT TO SCALE

**SOIL NOTES:  
INSTALLATION**

1. INSTALL BARRIER ALONG CONTOURS.
2. SECURE THE BARRIER WITH FASTENERS A MAXIMUM OF 4 FEET APART.
3. INSTALL WITH 2 FASTENERS AT CONNECTION POINTS WHERE BARRIERS OVERLAP.

**INSPECTION**

1. LOOK FOR SCOURING UNDERNEATH AND AT THE ENDS OF THE BARRIER.



PLAN

PAVEMENT INSTALLATION  
NOT TO SCALE

**PAVEMENT NOTES:  
INSTALLATION**

1. INSTALL THE HORIZONTAL FLAP ON THE UPSLOPE SIDE.
2. SECURE THE BARRIER WITH 1-INCH NAILS A MAXIMUM OF 4 FEET APART OR USE SANDBAGS.
3. INSTALL WITH 2 FASTENERS AT CONNECTION POINTS WHERE BARRIERS OVERLAP.
4. USE SOLVENT-FREE ADHESIVE TO ENSURE A TIGHT CONNECTION WITH THE PAVEMENT.

**PREFABRICATED BARRIER SYSTEM GENERAL NOTES:**

**MATERIALS**  
**BARRIER:** PREFABRICATED FOAM CORE ENCLOSED IN WOVEN GEOSYNTHETIC FABRIC.  
**FASTENERS:** 1-INCH OR 6-INCH NAILS, 1-INCH WASHERS, SOLVENT-FREE ADHESIVE, 6-INCH TO 8-INCH STAPLES, SAND BAGS, AND/OR GRAVEL-FILLED BAGS.

**INSPECTION**

1. ENSURE THAT THE BARRIERS ARE IN WATER TIGHT CONTACT WITH SOIL OR PAVEMENT.
2. LOOK FOR SPLIT, TORN, UNRAVELLING, OR SLUMPING BARRIERS.
3. ENSURE EQUIPMENT DOESN'T DRIVE OVER INSTALLED BARRIERS.

**MAINTENANCE**

1. REPLACE DAMAGED SECTIONS OF BARRIER.
2. REMOVE ACCUMULATED SEDIMENT UPSLOPE OF THE BARRIER BEFORE IT REACHES ONE-HALF OF THE DISTANCE BETWEEN THE TOP OF THE BARRIER AND THE GROUND SURFACE OR ONE-THIRD THE AVAILABLE STORAGE IF PROTECTING A WATER BODY OR STORM DRAIN INLET.

**REMOVAL**

1. REMOVE AND DISPOSE OF THE ACCUMULATED SEDIMENT THEN REMOVE THE BARRIER.
2. AFTER REMOVAL FILL TRENCHES AND NAIL HOLES TO BLEND WITH THE ADJACENT GROUND AND REVEGETATE AS NECESSARY.

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State of Alaska DOT&PF

**PREFABRICATED  
BARRIER SYSTEM**

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## **BMP 14.00. Prefabricated Driving Ground Protection Mat**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of a Prefabricated Driving Ground Protection Mat is to prevent rutting, minimize sediment tracking, protect wetlands from equipment damage, and avoid equipment getting stuck when driving through soft or muddy ground.

#### *Description*

Prefabricated Ground Protection Mats are flexible, sturdy fabric mats with ribs, or solid or flexible plastic mats or tiles.

#### *Other Names*

Mud Mats, Tundra Mats, Portable Access Mats, Temporary Roadway System.

#### *Applicability*

Prefabricated Driving Ground Protection Mats can be used to protect the ground surface from eroding when equipment is driving on it or to protect sensitive areas.

#### *Selection Considerations*

Prefabricated Driving Ground Protection Mats come in light- and heavy-duty grades. The grade of the mat needed should be determined based on the size and type of equipment that will use the mat, the frequency of use, and the type of ground the mat is protecting. Mats that are placed over a ground surface that requires preservation may require a heavier grade than mats placed on dirt surfaces without vegetation.

Prefabricated Driving Ground Protection Mats surfaces can be smooth or cleated to provide traction for vehicular traffic or pedestrians. When placed with the cleated side down, the cleats provide additional protection for solid surfaces such as concrete or asphalt surfaces.

- Prefabricated Driving Ground Protection Mats have the ability to interlock to form custom sizes.
- Ground pressure from vehicles may be reduced, causing minimal ground disturbance.

- Prefabricated Driving Ground Protection Mats can be rolled up or stacked for easy transport, storage, and reuse.
- Prefabricated Driving Ground Protection Mats can be washed and reused depending on the amount of wear.

#### *Common Failures or Misuses*

- Placement of reinforcing ribs in fabric mats parallel to the direction of traffic.
- Unless properly secured, mats can be dislodged or transported by traffic or high winds.

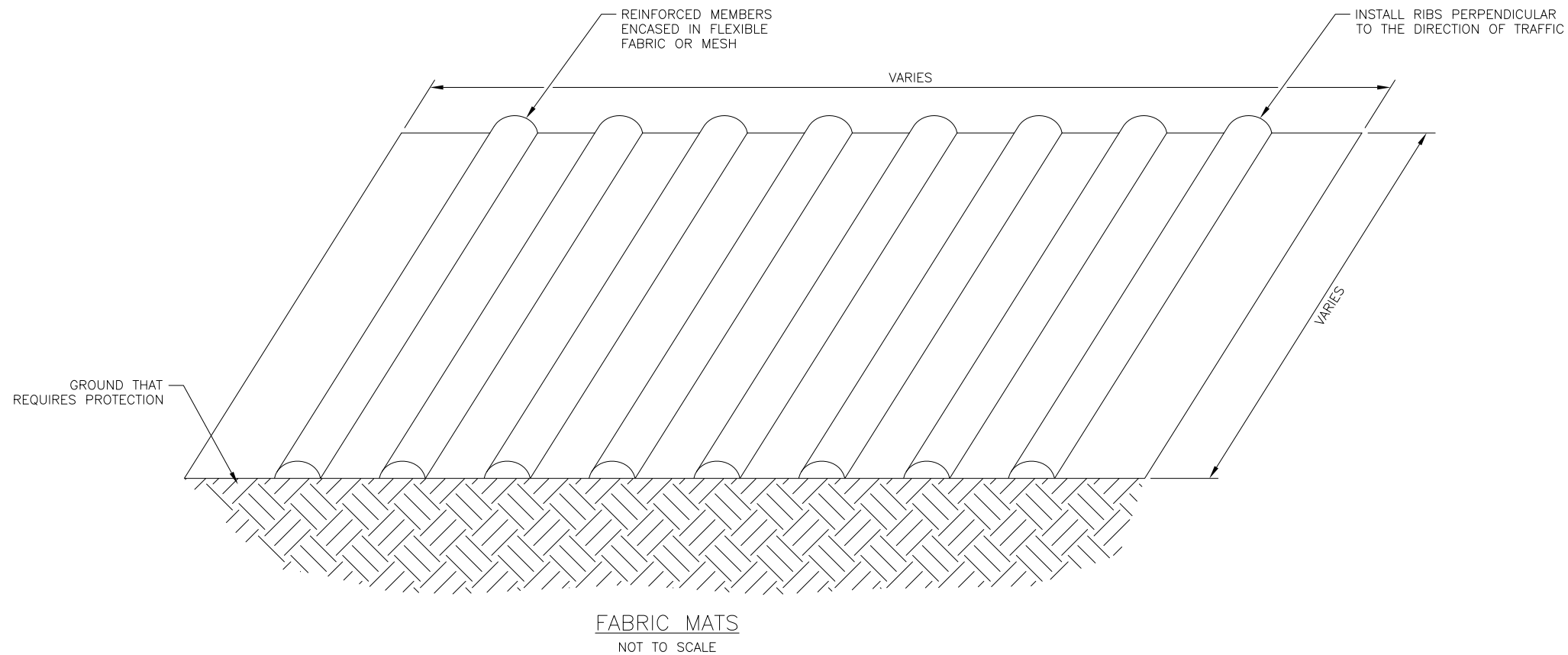
### SPECIFICATIONS

#### Standard Specification

- 676 – Prefabricated Driving Ground Protection Mat

#### Drawing

- BMP-14.00 Prefabricated Driving Ground Protection Mat



PREFABRICATED DRIVING GROUND PROTECTION MAT NOTES:  
MATERIALS  
PREFABRICATED GROUND PROTECTION MAT

**INSTALLATION**

1. ENSURE THAT THE GROUND IS CLEAR OF LARGE ROCKS OR OBJECTS.
2. LAY THE MAT FLAT ONTO SURFACE.
3. INTERLOCK MULTIPLE MATS TO COVER AREAS THAT REQUIRE PROTECTION.
4. CONNECT THE MATS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

**INSPECTION**

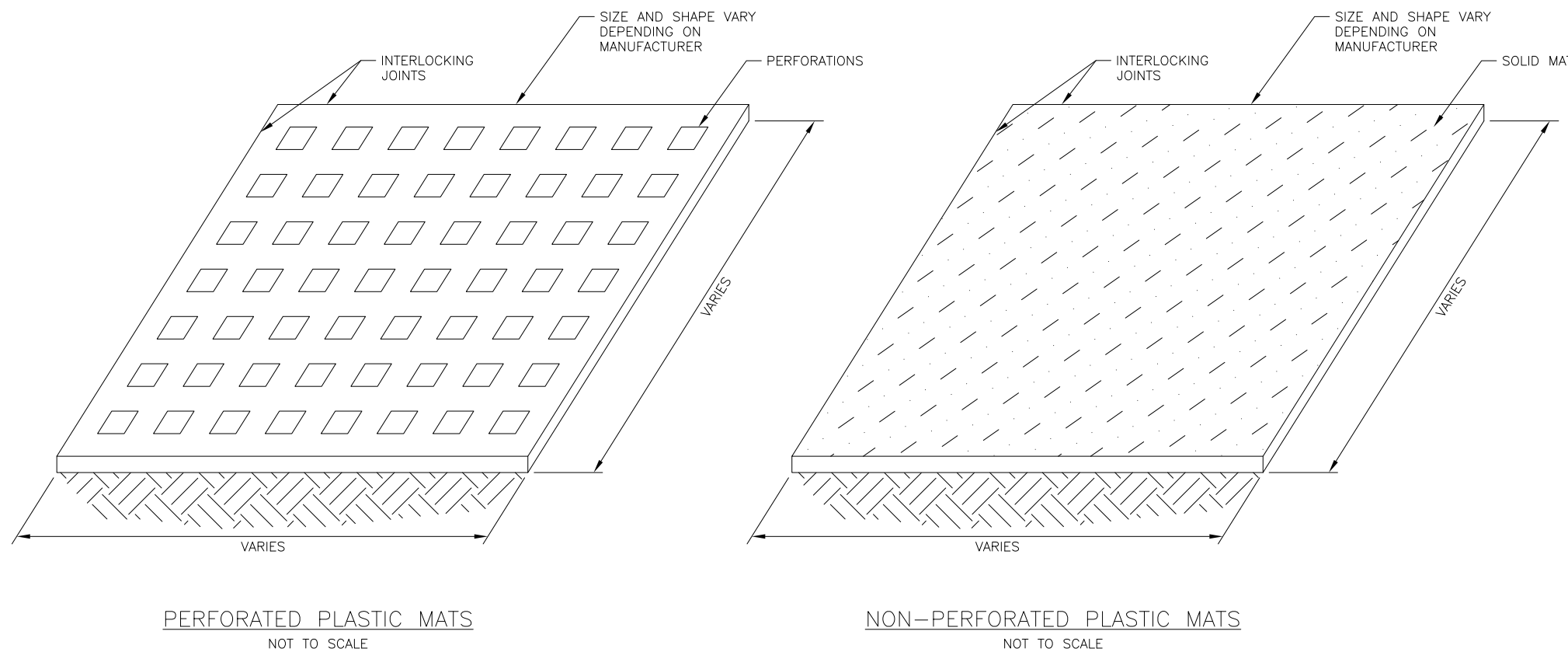
1. LOOK FOR SPLIT, TORN, OR UNRAVELLING FABRIC OR BROKEN UNITS.
2. ENSURE THAT THE MATS ARE COVERING AREAS THAT REQUIRE PROTECTION.
3. ENSURE VEHICLES DO NOT DRIVE ON SURFACES OUTSIDE OF THE MATS.
4. INSPECT FOR TRACKOUT.

**MAINTENANCE**

1. REPLACE DAMAGED MATS.
2. REMOVE SEDIMENT THAT ACCUMULATES ON THE MATS.
3. CLEAN OR REPLACE MATS IF THERE IS EVIDENCE OF TRACKOUT.

**REMOVAL**

1. REMOVE AND DISPOSE OF THE ACCUMULATED SEDIMENT THEN REMOVE THE MAT.
2. AFTER REMOVAL OF THE MAT AND IF NOT IN WETLANDS, FILL DISTURBED GROUND TO BLEND WITH THE ADJACENT GROUND AND REVEGETATE AS NECESSARY.



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**PREFABRICATED DRIVING  
GROUND PROTECTION MAT**

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## **BMP 15.00. Pumped Stream Diversion**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The primary purpose of all temporary diversion methods is to protect water quality by passing upstream flows around the active construction zone. Pumped Stream Diversion also allows in-water construction activities to take place under no-flow conditions, which may allow more efficient construction in a shorter time period.

#### *Description*

Pumped Stream Diversion is a temporary bypass system. Temporary dams are constructed upstream and downstream of the work area and water is pumped from a sump above the upstream dam. The water is conveyed around the work area and discharged back into the stream or river downstream of the downstream dam. The conveyance structure may be a pipe, flume, or bermed or excavated channel.

#### *Other Names*

Pump-Around, Temporary Diversion, Clear Water Diversion, Stream Diversion.

#### *Applicability*

Pumped Stream Diversion is often required during in-stream work that must be done under no-flow conditions and where the existing grade or physical setting is not sufficient for diverting the flow by gravity. For instance, during a culvert replacement, diverted water may need to be piped over the roadway from upstream to downstream. If the roadway crown is higher than the intake point, the grade would not be sufficient for gravity flow and Pumped Stream Diversion might be considered.

#### *Selection Considerations*

The designer should have a realistic estimation of project duration and time of year during which the construction activity will take place. If possible, the diversion should be limited to periods of low flow.

The designer must have a reliable estimate of base flow and potential peak flows during the construction period.

The design should consider whether the temporary diversion will cause greater environmental impacts

than if the project is constructed without temporary diversion. Factors such as the duration of the project, the sensitivity of the water body, the available area for pumps and bypass channel, the anticipated flow, and the season when the construction work will take place should all be considered.

Additional specific permit requirements including allowable work time periods or mitigation measures may be required by agencies, such as the U.S. Army Corps of Engineers, Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, and Alaska Department of Natural Resources. The designer should allow adequate time to apply for and receive permits, and be cognizant of permit requirements in order to design a system that will meet permit conditions. Permits may dictate the design or layout decisions.

Require that spill prevention and control measures for pumps be provided.

#### *Design*

Consider having the Regional Hydraulics Engineer review the design. In addition to the Pumped Stream Diversion plan sheet, include the Temporary Diversion Conveyance plan sheet in the contract.

*Flow Rate:* Size the system for base flow plus estimated flow from a 2-year 24 hour rainfall event including runoff from drainage area during the anticipated time of construction. Consider tributary area and seasonal rainfall patterns. If there are large paved areas upslope, consider a larger sized system. Specify the flow rate, which will be used by the contractor to properly size the pump.

*Pump Sizing:* Pump capacity must be sufficient for the design flow, topographic relief, length of discharge line, and other system head losses.

*Fish Streams:* Consider type and placement of screens or fish proof fences, if necessary in fish-bearing streams.

*Temporary Bypass and Dams:* Design a diversion conveyance system that is appropriate for the project area. See BMP-34 and BMP-35 Temporary Diversion Conveyance.

*Relationship to Other Erosion and Sediment Control Measures*

Pumped Stream Diversions may be used when Temporary Diversion Conveyance is not adequate; see BMP-15. Additional dewatering within the work area may be required; see BMP-7 Contained Silt Control System and BMP-9 Excavation Dewatering.

*Common Failures or Misuses*

- Improper dam and pump sizing for potential high flow events.
- Inadequate energy dissipater at point of discharge into the waterway.
- Conducting diversion activities without confirming local, state, and federal permitting and design requirements.

SPECIFICATIONS

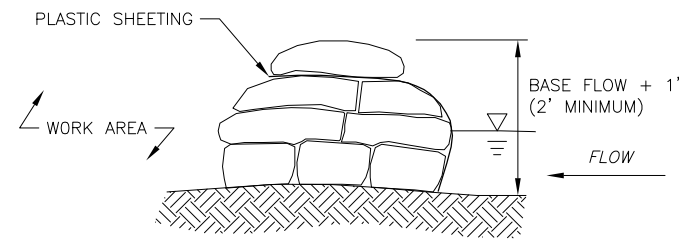
Standard Specification

- 677 – Pumped Stream Diversion

Drawing

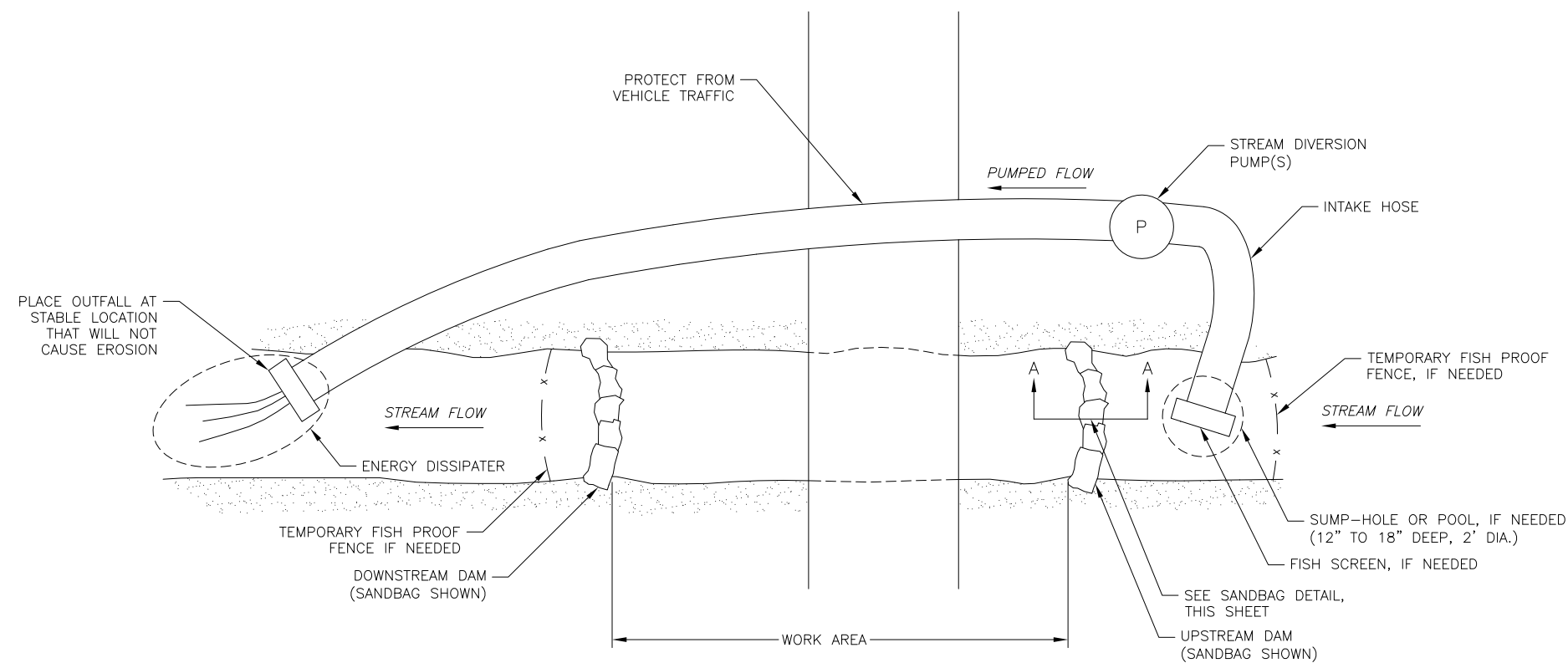
- BMP-15.00 Pumped Stream Diversion
- BMP-34.00 and BMP-35.00 Temporary Diversion Conveyance
- BMP-07.00 Contained Silt Control System
- BMP-09.00 Excavation Dewatering





SECTION A-A

SANDBAG DAM  
NOT TO SCALE



PLAN

PUMPED STREAM DIVERSION  
NOT TO SCALE

PUMPED STREAM DIVERSION NOTES:

MATERIALS

**DAM MATERIAL:** SANDBAGS COVERED WITH PLASTIC SHEETING (30 MIL OR 2 OR MORE LAYERS OF 10 MIL), RIPRAP, STEEL PIPE PLATE, SHEETPILE, INFLATABLE BLADDERS, OR EQUIVALENT.

**PUMP:** SIZED FOR DESIGN FLOW IN CONTRACT, WITH INTAKE LINE, FITTINGS, AND NOZZLES.

**ENERGY DISSIPATER:** RIPRAP, SANDBAGS, T-BAR SPREADER, OR EQUIVALENT.

**FISH BARRIER:** FENCE OR SCREEN, IF NEEDED.

SPILL PREVENTION BMPS.

INSTALLATION

1. COORDINATE WITH DEPARTMENT FOR INSTALLATION OF FISH FENCE, IF NEEDED.
2. INSTALL A CONVEYANCE, SUMP (IF NEEDED), AND INTAKE HOSE.
3. INSTALL THE UPSTREAM AND DOWNSTREAM DAM.
4. PLACE THE PUMP IN AN AREA DESIGNED FOR ITS USE AND OPERATION WITH SPILL PREVENTION MEASURES.
5. INSTALL THE ENERGY DISSIPATER.

INSPECTION

1. WHEN PUMPING, MONITOR PUMPS, INTAKE AND DISCHARGE POINTS. ENSURE THAT PUMPS ARE ADEQUATELY SIZED.
2. INSPECT UPSTREAM AND DOWNSTREAM DAMS FOR OVERTOPPING, BYPASS, UNDERCUTTING, OR OTHER DEFECTS.
3. INSPECT THE CONVEYANCE STRUCTURE FOR LEAKS, EROSION, OR OTHER DEFECTS.
4. INSPECT DISCHARGE POINT FOR EROSION OR FAILURE OF THE ENERGY DISSIPATION MATERIAL.
5. INSPECT THE EQUIPMENT AREA FOR PROPERLY STORED FUEL AND OTHER POTENTIALLY HAZARDOUS SUBSTANCES.

MAINTENANCE

1. REINFORCE OR RESTORE ANY PORTION OF THE DAMS, CONVEYANCE STRUCTURE, OR ENERGY DISSIPATER.

REMOVAL

1. ENSURE STREAM BANKS AND SUMP ARE STABLE BEFORE REMOVAL
2. REMOVE THE DOWNSTREAM DAM FIRST, THEN THE UPSTREAM DAM.
3. REMOVE THE ENERGY DISSIPATER.
4. REMOVE THE INTAKE HOSE.
5. REMOVE THE TEMPORARY CONVEYANCE STRUCTURE. BACKFILL OR REGRADE AND RESTORE TO ORIGINAL CONTOURS.
6. REGRADE AND SEED OR PERMANENTLY STABILIZE ALL DISTURBED AREAS.

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State of Alaska DOT&PF

PUMPED STREAM  
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## BMP 16.00. Rock Filter Berm

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### DESIGN CONSIDERATIONS

#### *Objectives*

A Rock Filter Berm is a perimeter sediment control device designed to prevent sediment in silt-laden sheet flow from leaving the construction site. A properly installed berm intercepts sheet drainage, contains sediment on-site, and does not permit spillover or bypass.

#### *Description*

A Rock Filter Berm is a gravel berm placed down slope from erosion-susceptible terrain to trap sheet flow run-off before it exits the project site. Intercepted sheet flow pools along the uphill side of the Rock Filter Berm and standing water promotes settling sediment out of suspension. The Rock Filter Berm blocks suspended particles and restricts water exfiltration.

#### *Other Names*

Gravel Filter Berm.

#### *Applicability*

Rock Filter Berms are applicable where temporary measures are necessary to retain sediment from sheet flow.

#### *Selection Considerations*

Barrier locations are chosen based on site features and conditions (e.g., soil types, climate, terrain features, sensitive areas, etc.), design plans, existing and anticipated drainage courses, and other available erosion and sediment controls. Typical barrier sites are at the toe of fill or on side slopes above waterways or drainage channels.

Rock Filter Berms may be difficult to remove when construction is complete. They may be incorporated into stabilized rock embankments or other permanent stabilized features.

Use of this sediment control measure and the level of effort should be commensurate to the potential problem. A Rock Filter Berm is not to be used solely as a project delineator.

Allow room for equipment access during installation, maintenance, and removal that will

avoid encroachment on sensitive areas such as wetlands.

#### *Design*

*Berm Placement:* Berms should be placed on level contours at the toe of slope. Provide sufficient area for ponded water on the upgradient side of the berm.

The standard drawing includes a rock type that is typically sufficient and is intended to keep fine soil particles from migrating through the berm.

#### *Relationship to Other ESC Measures*

Sediment control measures are secondary to erosion prevention or soil stabilization measures. Rock Filter Berms may be used as part of a sequential system with other temporary or permanent measures such as soil stabilization or revegetation.

#### *Common Failures or Misuses*

- Incidents in which berm height is affected, such as vehicular traffic over the berm.
- Berm wash-out due to high levels of impounded water or sediment.
- Berm function impairment due to sediment build-up or other lack of maintenance.
- Release of sediment-laden water through a bypass or gap in the Rock Filter Berm.

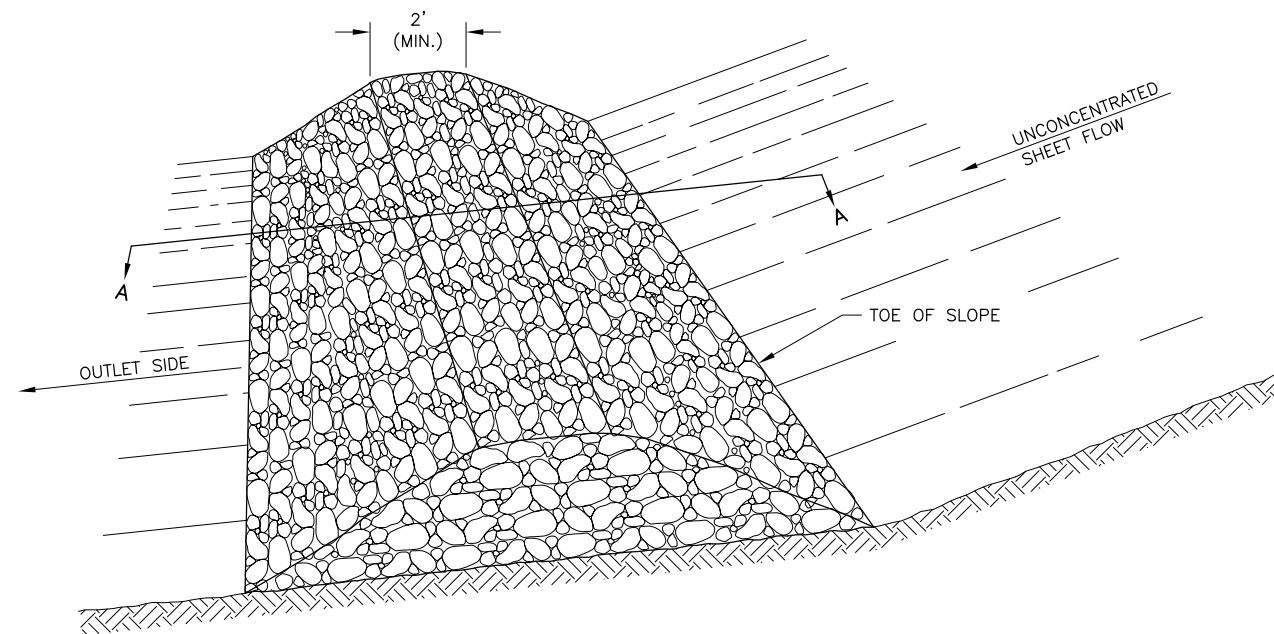
### SPECIFICATIONS

#### Standard Specification

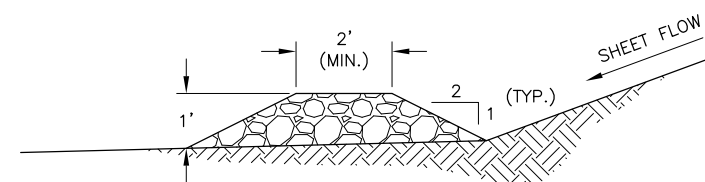
- 678 – Rock Filter Berm

#### Drawing

- BMP-16.00 -- Rock Filter Berm



PLAN  
NOT TO SCALE



SECTION A-A  
NOT TO SCALE

**ROCK FILTER BERM NOTES:**

**MATERIALS**

ROCK: WELL GRADED 3-INCH MINUS THAT WILL NOT RELEASE SEDIMENT AND HAS LESS THAN 5 PERCENT PASSING THE #200 SIEVE.

**INSTALLATION**

1. PLACE THE ROCK BERM AS SHOWN ON THE PLANS WITHIN 24 HOURS AFTER GRUBBING.

**INSPECTION**

1. OBSERVE FOR BERM CONTINUITY INCLUDING COLLAPSE, DAMAGE, COMPROMISED INTEGRITY, OR OTHER FUNCTIONAL INADEQUACIES.
2. LOOK FOR EVIDENCE OF SEDIMENT FLOW OR EROSION ON THE DOWNHILL EDGE OF THE BERM.
3. NOTE DEPTH OF SEDIMENT BEHIND BERM TO SEE IF SEDIMENT IS CLOSE TO ONE-HALF THE BERM HEIGHT.
4. LOOK TO SEE IF THE BERM IS FILTERING OR WHETHER IT HAS BECOME CLOGGED OR OTHERWISE NON-FUNCTIONING.

**MAINTENANCE**

1. REPAIR OR RESTORE ANY BERM DISCONTINUITIES, DAMAGE, OR POINTS OF FAILURE.
2. REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES ONE-HALF OF THE BERM HEIGHT OR ONE-THIRD OF THE AVAILABLE STORAGE IF PROTECTING A WATER BODY OR STORM DRAIN INLET.

**REMOVAL**

1. INCORPORATE THE ROCK BERM INTO THE SLOPE, UNLESS DIRECTED OTHERWISE. STABILIZE BARE GROUND AND THE FILL SLOPE.

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State of Alaska ADOT&PF

**ROCK FILTER  
BERM**

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## **BMP 17.00. Rock Slope Armor**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The primary purpose of Rock Slope Armor is to protect slopes with erodible or ice-rich soils from wind and water erosion, including rainfall, sheet flow run-on, or seepage. Rock Slope Armor may temporarily stabilize slopes until final stabilization is achieved, or may serve as final non-vegetative permanent stabilization on slopes when implemented in accordance with the Alaska Construction General Permit (Alaska CGP).

#### *Description*

Rock Slope Armor is a layer of rock, such as ditch lining rock, cobble rock, concrete rubble, or riprap, which is hand or mechanically placed on an erodible soil slope.

#### *Other Names*

Rock Slope Protection.

#### *Applicability*

Rock Slope Armor is applicable to:

- Slopes where unanticipated flows are encountered. On a cut slope, this could be due to run-on. A temporary diversion should be installed to allow construction of the cut slope, but the rock slope armor provides permanent stabilization.
- Fill slopes around the inlet and outlet of culverts.
- On bridge abutments above the design water elevation and at points where bridge scuppers discharge near or on abutments.
- The downside of roadway superelevations where the ground surface slopes away from the roadway (foreslopes).
- On slopes where groundwater seeps or springs occur.
- On cut slopes into ice-rich soils or that seep permafrost melt.

#### *Selection Considerations*

The designer must have information about the slope length, steepness, embankment or cut slope soil type

and gradation, groundwater seepage, and potential for melting permafrost. The ditch may also need to be lined.

This best management practice (BMP) is not intended for stream banks, channel bottoms, the side slopes of waterbodies below the design high water surface elevation, or for shorelines subject to wave action, because these situations require more design.

Geotechnical expertise is required when using this BMP for embankments over 20 feet in height, embankments on soft or ice-rich soils or potentially unstable ground, embankments that could impact adjacent structures, if there is a potential for a significant groundwater gradient beneath the cut slope or embankment, or if surface water levels are significantly higher on one side of the embankment than the other.

Rock size and range of sizes should be considered. A well graded mix, with rocks in a range of sizes, should be selected. Rocks of uniform rock size, or a rock mix with very large and very small rocks with few intermediate-sized rocks (a "gap-graded" mixture), is more likely to become dislodged causing the armor to fail.

Rock shape should be considered. Angular or sub-angular rocks have better performance than round rocks because they are less likely to become dislodged. Round rock should not be used on slopes steeper than 2:1. Soundness and durability should be indicated.

The designer may specify whether rock is hand placed or spread mechanically. When placing by hand, rocks should be placed so that the longitudinal axis is perpendicular to the slope face and fall line. Rocks may also be dumped and spread in layers using a bulldozer or other means, in which case care should be taken not to damage underlying filter material (if specified). In either case, the larger rocks should be placed in the footing trench, segregation by rock size should be minimized, and rocks should be placed so there is a minimum of voids.

When considering rock for bridge scuppers or downspout energy dissipaters, consider whether downspout extenders to route water to vegetated or stabilized areas could be used instead.

## Design

*Slope of Area to be Protected:* Slopes between 1.5:1 and 3:1. Flatter slopes should be seeded or revegetated; or, if in a location where vegetation cannot be established (such as areas shaded by bridges), consider a pea gravel layer. Steeper slopes require geotechnical engineering and a specification for angular rock.

*Rock Properties:* Specify rock properties or criteria, such as durability, wear (for instance, per AASHTO T 96), minimal clay lumps and friable particles (for instance, per AASHTO T 112), or shape.

*Armor Rock Size:* When used on a slope, specify a rock size based on steepness of slope, soil type, and expected seepage pore water pressure. Specify whether a key-in trench is required at the toe of the slope and, if so, the key-in dimensions.

Size rock for bridge scuppers or downspout energy dissipaters based on expected flow velocity.

*Rock Gradation:* Design particle size distribution of the armor rock mix. Once a size range has been designed, the designer can reference an Alaska Department of Transportation & Public Facilities (ADOT&PF) riprap, rock, ditch lining, or aggregate specification (e.g. ADOT&PF's Standard Specification for Highways or Standard Specifications for Airport Construction) if one is available or create a specification for the project's bid documents.

*Rock Layer Thickness:* Unless rip rap is specified, the designer needs to specify the thickness. If using riprap, the layer thickness will be defined by the riprap classification. Typically, only one layer is needed.

*Rock Layer Height and Length:* The designer needs to specify this on the plans.

*Filter Fabric or Layer:* A filter fabric or filter layer should be specified if either of the following apply:

$$\frac{D_{15} \text{ rock armor layer}}{D_{85} \text{ fill or cut slope soil}} > 5$$

or

$$\frac{D_{15} \text{ rock armor layer}}{D_{15} \text{ fill or cut slope soil}} > 40$$

*Other Designer Responsibilities:* The designer needs to add slope preparation and run-on diversion, as appropriate.

## *Relationship to Other Erosion and Sediment Control Measures*

This should be a BMP of last resort, except in ice-rich permafrost slopes, where it is the preferred treatment. Install upgradient controls to divert water from the slope shoulder where possible. Other temporary or permanent stabilization methods should be considered, including: Rolled Erosion Control Product (RECP), Hydraulic Erosion Control Product, (HECP), Compost Blanket, Temporary Seeding, and Permanent Seeding.

Rock Slope Armor is different from Slope Drain in that it is used to stabilize a slope in response to dispersed or minimally concentrated flow; whereas a Slope Drain is used to convey concentrated flows down a slope to an appropriate discharge location.

## *Common Failures or Misuses*

- Slope too steep for rock size results in rock displacement and downslope movement of rocks.
- Failure to install up-gradient stormwater controls.
- Rock not properly graded results in downslope movement of rocks.

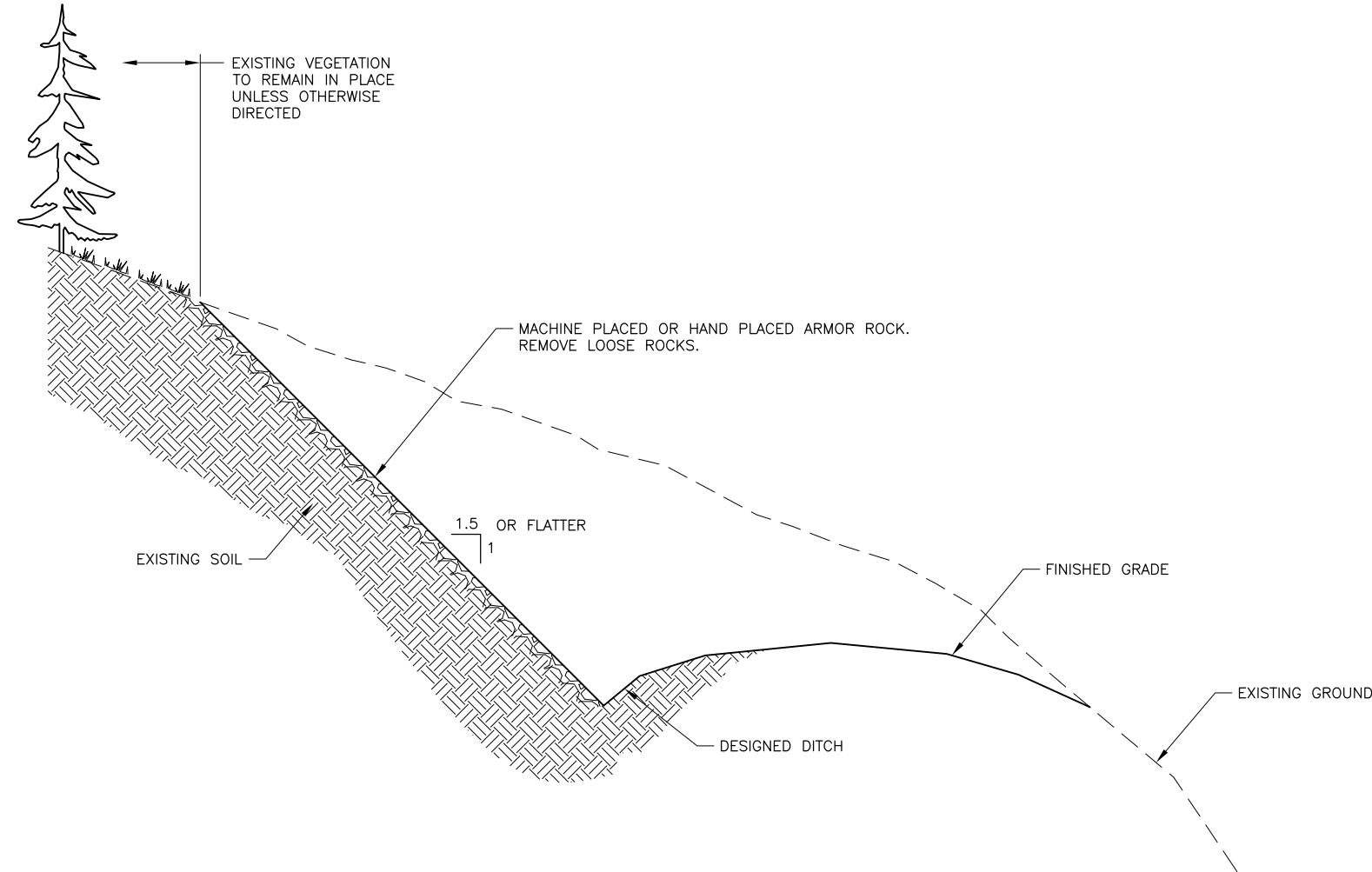
## SPECIFICATIONS

### Standard Specifications

- 679 – Rock Slope Armor
- 610-2.01 Ditch Lining (0-50 percent less than 3-inch; up to 8-inch maximum)
- 611-2.01 Riprap
- 703-2.10 Porous Backfill (3-inch minus rock)

### Drawing

- BMP-17.00 Rock Slope Armor



PROFILE

ROCK SLOPE ARMOR  
NOT TO SCALE

**ROCK SLOPE ARMOR NOTES:**

**MATERIALS**

ROCK: COBBLE, GRAVEL, CRUSHED GRAVEL, CRUSHED ROCK, OR ANY COMBINATION OF THESE, MEETING SPECIFICATIONS AT 610-2.01 (DITCH LINING), 611-2.01 (RIPRAP), OR 703-2.10 (POROUS BACKFILL). USE ANGULAR ROCK ON SLOPES STEEPER THAN 2:1.

**INSTALLATION**

1. PREPARE THE SLOPE AS DESCRIBED IN THE CONTRACT OR AS DIRECTED BY THE ENGINEER.
2. MINIMIZE CONCENTRATED RUN-ON FROM CROSS-GRADIENT AND UP-GRADIENT SOURCES BY SITE GRADING AND/OR DIRECTING OR DIVERTING RUN-ON OR RUN-OFF AWAY FROM THE SLOPE FACE.
3. IF SPECIFIED ON THE PLANS OR DIRECTED BY THE ENGINEER, INSTALL THE FILTER FABRIC OR FILTER LAYER. AFTER CLEARING DEBRIS FROM SLOPE INSTALL FILTER FABRIC ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
4. INSTALL THE ROCK STARTING AT THE BOTTOM OF THE SLOPE AND PROCEEDING IN HORIZONTAL LIFTS UPWARDS.
5. PLACE STONES TO THE THICKNESS, HEIGHT, AND LENGTH SHOWN ON THE PLANS. DUMP SMALL ROCKS AND SPREAD BY BULLDOZER OR OTHER SUITABLE EQUIPMENT. DURING SPREADING, DO NOT CRACK THE ROCK.

**INSPECTION**

1. INSPECT FOR DAMAGE TO THE ROCK ARMOR, INCLUDING DISPLACED STONES, SLUMPING, AND EROSION AT EDGES, ESPECIALLY DOWNSLOPE.

**MAINTENANCE**

1. REPAIR DAMAGED ROCK ARMOR SLOPE OR EDGES AS SOON AS PRACTICABLE AND BEFORE FURTHER DAMAGE CAN OCCUR.

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Date	Description	By

State of Alaska DOT&PF

**ROCK SLOPE  
ARMOR**

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## BMP 18.00. Rolled Erosion Control Products for Slopes

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### DESIGN CONSIDERATIONS

#### *Objectives*

Roller erosion control products (RECPs) are installed on slopes to provide erosion control and soil stabilization.

#### *Description*

RECPs are manufactured mats or coverings that are unrolled and anchored to unvegetated soil.

The Erosion Control Technology Council (ECTC) ([www.ectc.org](http://www.ectc.org)) defines subcategories depending on the materials used in the manufacturing and the intended purpose of the product. The following describes the various types of RECPs:

- Temporary Degradable RECPs – These products can be expected to last from between three months and three years depending on their composite materials and site climate conditions. Commonly called blankets, the materials typically used in the manufacture of temporary degradable RECPs consist of various fibers, straw, flax, coconut (coir), and wood shavings (excelsior) sewn to or between netting made of photodegradable plastics or biodegradable netting. Alternatively, the product may consist of natural fibers (such as jute or coir) woven into mats that have varied weights per square yard. Typically the greater the weight per unit of area the stronger the product and the longer it will last.
- Turf Reinforcement Mats (TRMs) – Permanent, non-degradable, UV-resistant materials designed to resist erosion in areas exposed to high shear stresses. TRMs can be used to convey concentrated flows while supporting the establishment of vegetation. Applications include the replacement of conventional riprap for down-drains and at culvert outlets.

#### *Other Names*

- Erosion control geotextile, erosion control blankets (ECB), erosion control mat.

#### *Applicability*

RECPs are used where seeding and mulching alone are inadequate to stabilize soil. RECPs offer greater assurance where mulch must be anchored and other methods, such as crimping or tackifiers, are unfeasible. Applications range from coverings for temporarily inactive construction sites to long term permanent protection of steep slopes.

#### *Selection Considerations*

The designer must select the type of RECP based on site conditions, climate conditions, timing of installation, and field conditions in the areas of installation for access and anchor placement.

- All RECPs must be selected based on the expected functional longevity required to protect the seedbed and prevent erosion during the vegetation establishment period and for the expected shear stress the product will be exposed to. Evaluate the following:
  - *Duration of need, temporary (e.g. 3 months up to 2 years) vs. permanent (2-10 years)*
  - *Slope length*
  - *Slope gradient (e.g. flatter than 3:1, 2:1, or 1:1 or steeper)*
  - *Soil type and erodibility*
  - *Seasonal temperature and weather patterns; regional precipitation distribution*
  - *Vegetation needs, especially where germination conditions are not optimal*
- In general, the longer the product must last the greater the shear stress resistance is needed. The time required for vegetation establishment should be exceeded by the product's functional longevity. Selecting RECP strength is a function of the expected duration and velocity of any surface flows over the blanket and is decided by considering the shear stress resistance in the RECP specification.
- Details regarding product longevity and applications for slopes with consideration for expected shear stresses and slope steepness are available from the ECTC specifications at [www.ectc.org](http://www.ectc.org). Use the design selection tables to select the product type based on the required longevity to ensure vegetation establishment and

the necessary strength to resist the expected shear stress to which the RECP will be exposed. ECTC has four charts for degradable RECPs: Ultra Short-Term; Short-Term; Extended-Term; and Long-Term. To use these charts, you will need to know the maximum slope gradient and the C-Factor. The C-Factor is the cover management factor in the Revised Universal Soil Loss Equation (RUSLE). C-Factors can be determined from tables and are a function of the mulch application rate and type of the seeding. From the ECTC charts for degradable RECPs, determine the maximum shear stress and minimum tensile strength to require for the RECP and add these to the specification. Also add the RECP to the Materials Certification List.

- Coordinate with the regional environmental section to determine if there are wildlife or fish concerns that would influence the selection of the type of RECP netting. Natural fiber netting may be preferable to synthetic based on installation location and wildlife entanglement concerns.
- Anchors: The designer must consider the type and number of anchors needed for each site. Manufacturer's specifications are a minimum standard to be used for guidance. Designers may increase the length and numbers of anchors based on site conditions. Specification 754-2.02 calls for anchors that are applicable in typical situations. Designers must consider soil cohesion with regard to anchor length. Sandy soils will require longer anchors as the soil is less cohesive. Designers should also call for more anchors or longer anchors if the location is windy. Designers should consider whether the site will be mowed and if so, may not want to specify metal anchors. Site topography may require more anchors than indicated in standard drawings to ensure complete contact with the soil surface.
- Installations that may be exposed to lateral flow, wave action, or free-board water movement and forces require trenching of the exposed edges to ensure product effectiveness.
- Proper installation is critical to the effectiveness of RECPs. Runoff must be prevented from concentrating under the RECP and causing erosion under the product. Note that typical

details are for illustration only and all RECPs must be installed per manufacturer's guidelines as a minimum and in conformance with the project specifications.

- If there is a situation in which the RECP would be removed, it should be specified on the drawing. Otherwise, it is assumed that both temporary and permanent RECPs will remain and not be removed at the end of construction.

#### *Relationship to Other ESC Measures*

RECPs can complement seeding and revegetation. Byproducts of RECP decomposition add mulch benefits and soil enhancement. RECPs can be used in conjunction with benching or other runoff velocity slowing or redirecting measures. RECPs aid in dust control.

#### *Common Failures or Misuses*

- Improper installation is the most common problem with RECPs. Many installations do not trench-in the RECP at the top of the slope, allowing surface flows to get under the RECP and resulting in seed and soil washing away.
- Improper anchoring is also found to be a common cause of RECP failure. Inspectors must verify that the RECP has been properly anchored according to the specifications for the particular slope steepness, soil cohesion, and expected shear stress. Anchoring must ensure that the product is in complete contact with the soil surface.

#### SPECIFICATIONS

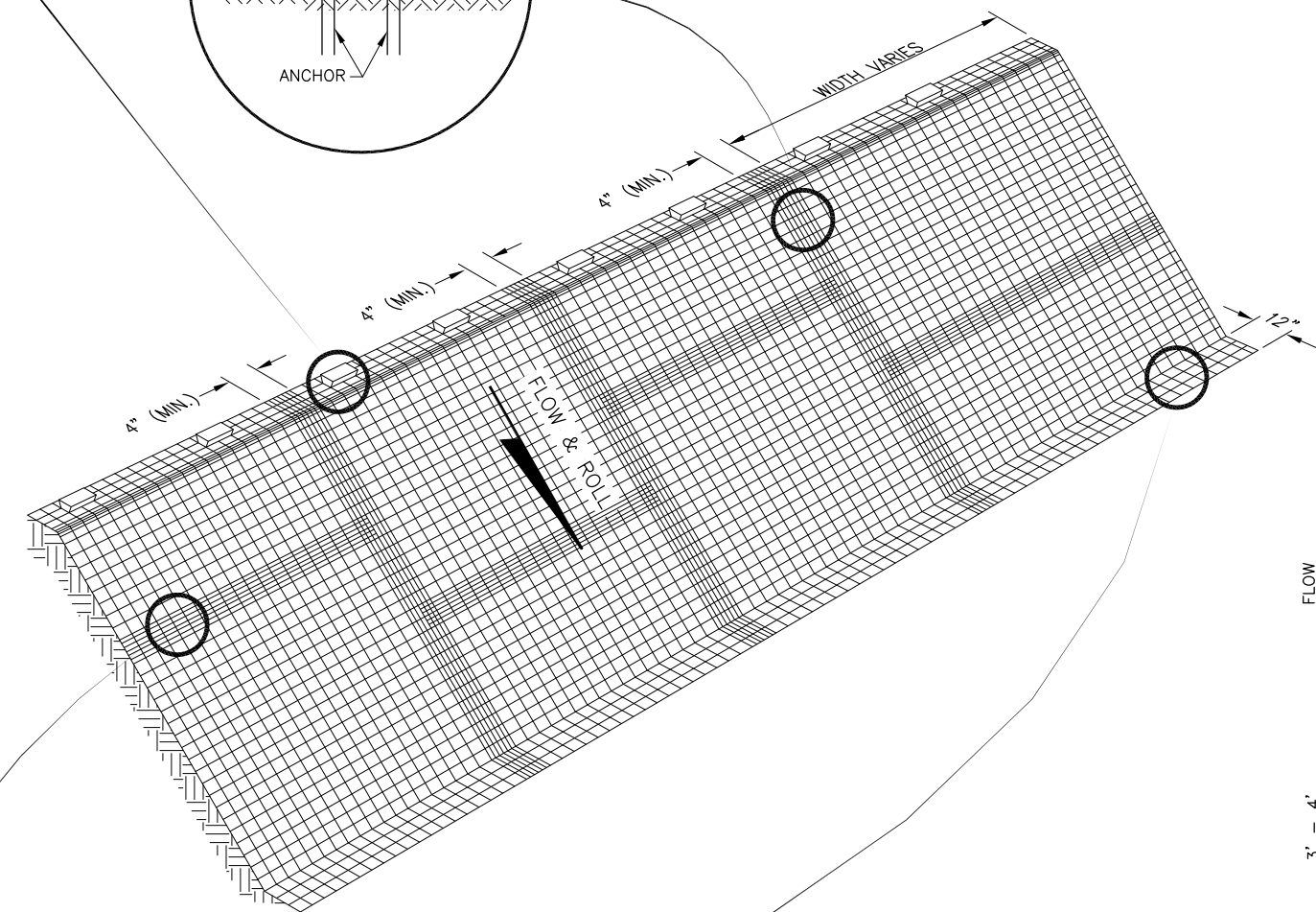
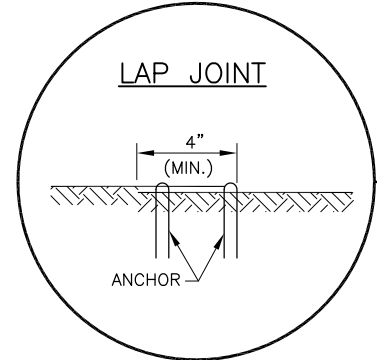
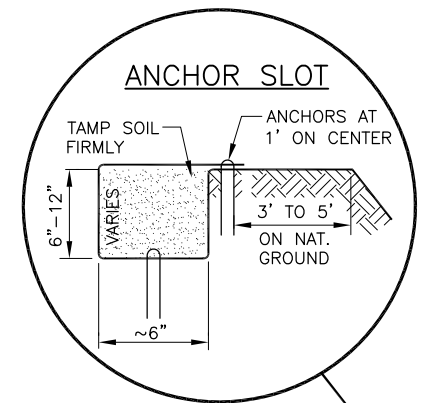
##### Standard Specifications

- 654 – Rolled Erosion Control Product for Slopes
- 754 – Rolled Erosion Control Products

##### Drawing

- BMP-18.00 – Rolled Erosion Control for Slopes

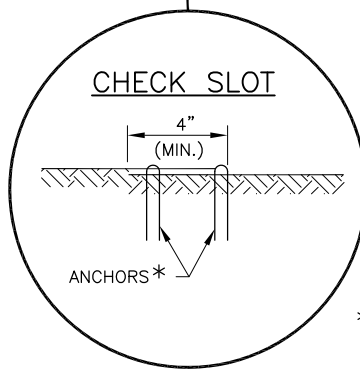




**NOTES**

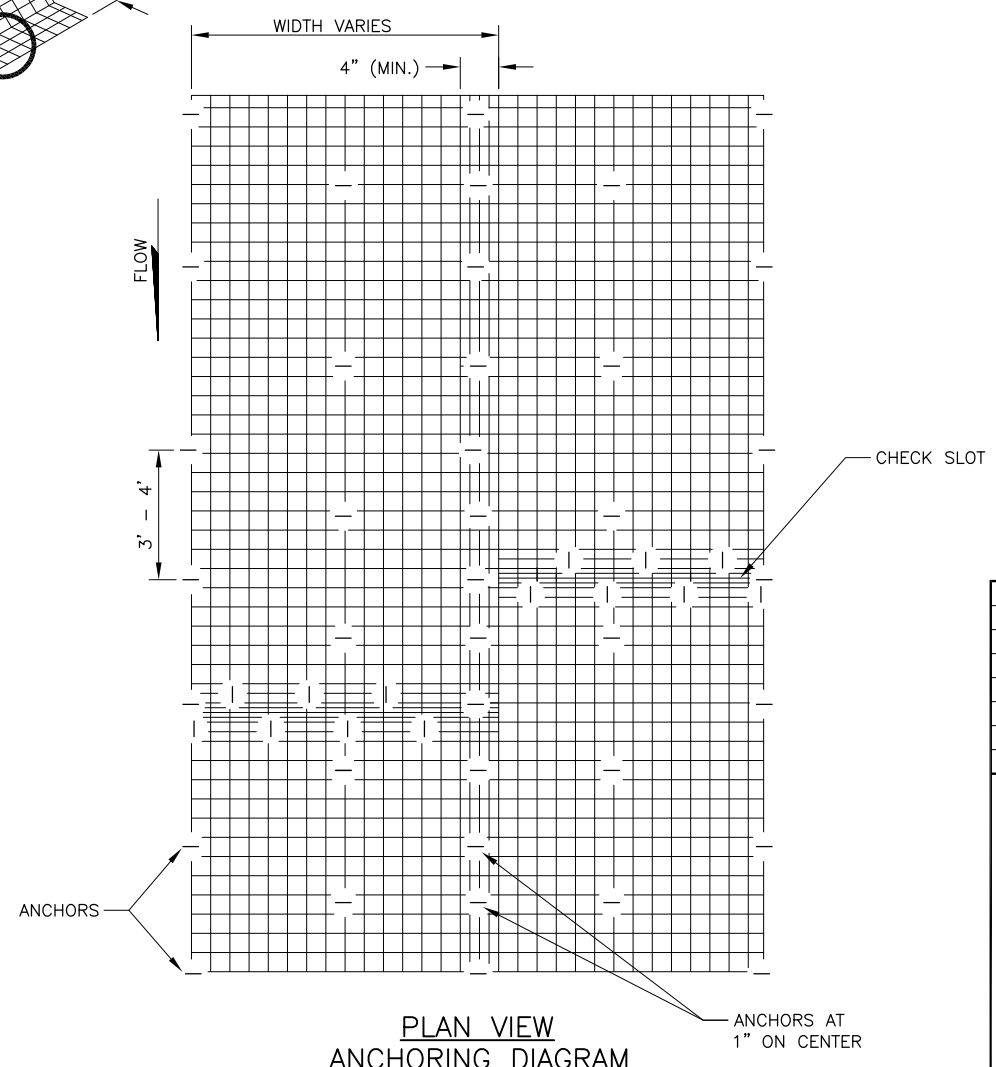
1. INSTALL AND ANCHOR IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS OR AS APPROVED BY THE ENGINEER.
2. SMOOTH SOIL UNDER RECP AS MUCH AS POSSIBLE TO ENSURE INTIMATE CONTACT BETWEEN THE RECP AND THE SOIL.
3. INSTALL TO ENSURE THE RECP MAKES INTIMATE, CONTINUOUS CONTACT WITH THE GROUND SURFACE.

CHECK SLOT SPACINGS	
SLOPE	SPACING
LESS THAN 4%	75'
4% OR MORE	50'



MATERIALS USED IN CHECK SLOT SHALL OVERLAP 4"

\*INSTALL WITH TWO ROWS OF STAGGERED ANCHORS 4" APART AND 4" ON CENTER.



PLAN VIEW ANCHORING DIAGRAM

REVISIONS		
Date	Description	By

State of Alaska  
Department of Transportation  
& Public Facilities

**ROLLED EROSION CONTROL FOR SLOPES**

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NOT TO SCALE

Date 12/2015 X/XX/XX

## **BMP 19.00. Silt Curtain**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Silt Curtains are used to isolate work areas within or adjacent to water bodies. When properly installed silt curtains function as a floating silt fence and retain sediment within their boundaries limiting the sediment discharged to the water body.

#### *Description*

Silt Curtains are barriers constructed of geotextile fabric of varying length and fabricated with floats sufficient to maintain buoyancy, and weights to keep the fabric skirt held in place below the water level. The floats are encased in or attached to the geotextile or membrane material. The skirt may be manufactured to any depth sufficient to provide the desired barrier for the work area. As the length of material is increased, the depth of isolation increases; however, the float sizing and weights must be increased accordingly. Typically the weight is constructed of metal anchor chain sewn into the bottom of the skirt. The anchor chain must be heavy enough to resist displacement by tides and flowing water. Anchor points to secure the curtain in place are usually necessary.

#### *Other Names*

Flotation Silt Curtain, Turbidity Curtain.

#### *Applicability*

Silt Curtains can be used to isolate in-water work by surrounding work areas or water intake structures. They are most common for shoreline work that will involve the disturbance of soil down to or below the waterline. When installed from bank to bank along a water body and properly anchored, a Silt Curtain will reduce the release of sediments from the permitted work area.

#### *Selection Considerations*

- When designing for work area isolation, the required depth must first be considered. If the required depth and 0.5 feet of freeboard can be attained with Silt Fence, Silt Fence may be used.
- The anchor weight or chain, if in contact with the water body bottom, may cause damage to near shore habitat. Wave action, tidal influences,

and wind can create motion of the weights or chain impacting areas that should be protected.

- With the desired depth selected, the float sizing and appropriate weight can then be designed to keep the Silt Curtain in a vertical position with regard to the installation location. The standard drawing does not specify the gap dimension, so the designer needs to add it. The designer should also specify the anchor chain length.
- Anchor positions to secure the Silt Curtain may be designated when the desired installation location is identified.
- Silt Curtains should not be placed across the flow as this will reduce the effectiveness of the barrier. The floats can be pulled down below the surface or the weights can be pushed aside by the flow and result in the release of sediments to the water body.
- If the area within the Silt Curtain boundary is also habitat for plants and animals, the concentration of sediment in these areas could cause negative impacts. Consider permit conditions and environmental commitments in the design.

#### *Design*

Designers must specify the depth, length, and location of the curtain to allow for the effective retention of sediment and completion of the work. Designers must also specify whether the curtain fabric must be pervious or impervious.

In determining the depth of the Silt Curtain, consider whether the water body is still water or subject to tide, wave, or wake disturbance or fluctuating river levels, as well as the substrate and nature of the aquatic habitat. Based on these considerations, specify a gap dimension for the distance between the bottom of the Silt Curtain and the sea floor or water body bottom to reduce damage to the floor or bottom and to near shore habitat.

The fabric may be specified to allow for more or less flow to pass through the fabric. Membrane material may be used in the construction to create an impermeable barrier that will isolate an area completely.

Floats should have high visibility color markings.

*Relationship to Other Erosion and Sediment Control Measures*

Silt Curtains can complement dewatering activities and in-water work activities.

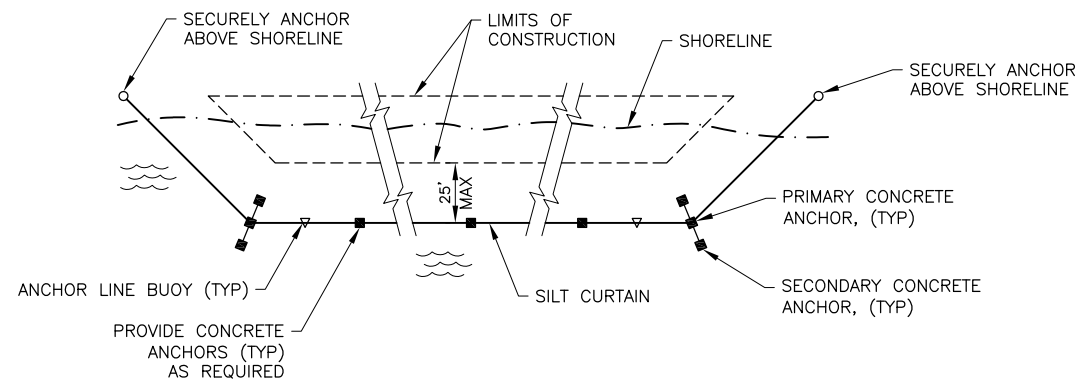
SPECIFICATIONS

Standard Specification

- 680 – Silt Curtain

Drawing

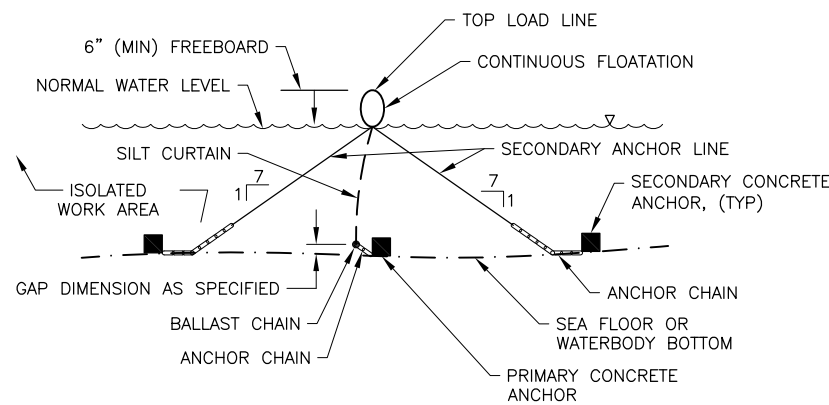
- BMP-19.00 Silt Curtain



PLAN

**NOTES:**

1. ALL EXPOSED AND DISTURBED SHORELINE SHALL BE ENCLOSED WITH SILT CURTAIN.
2. SECONDARY ANCHORS SHALL BE PLACED ON ALL CORNERS AS REQUIRED TO SECURE SILT CURTAIN IN PLACE.



SECTION

TYPICAL SILT CURTAIN  
NOT TO SCALE

**SILT CURTAIN NOTES:**  
**MATERIALS**

**FLOTATION SILT CURTAIN:**

1. PROVIDE COMMERCIAL MANUFACTURED SILT CURTAIN, WITH DEMONSTRATED ABILITY TO TRAP AND HOLD SEDIMENT AND DEBRIS WITHIN THE DEFINED WORK AREA, AND WITH ANCHOR LINES, BALLAST, AND FLOATS THAT ARE ATTACHED TO THE SILT CURTAIN AT REINFORCED ATTACHMENT POINTS PROVIDED BY THE MANUFACTURER.
2. OBTAIN APPROVAL OF PROPOSED FLOTATION SILT CURTAIN PRIOR TO SHIPMENT TO THE PROJECT SITE. PROVIDE SUBMITTALS THAT INCLUDE CERTIFICATES OF MATERIALS TESTING, MANUFACTURER'S PRINTED INSTRUCTIONS AND/OR SHOP DRAWINGS, AND PROPOSED INSTALLATION/REMOVAL PROCEDURES.
3. CURTAIN FABRIC SHALL BE PERVIOUS GEOTEXTILE MEETING AASHTO M 288 FOR TEMPORARY SILT FENCE OR IMPERVIOUS COATED FABRIC SUCH AS NYLON REINFORCED POLYVINYL CHLORIDE, TREATED POLYPROPYLENE/POLYESTER FABRIC, OR APPROVED EQUAL, SEE CONTRACT.
4. PROVIDE A CURTAIN TALL ENOUGH TO EXTEND FROM THE BOTTOM OF THE WATER COLUMN TO THE WATER SURFACE, LESS THE GAP DIMENSION SPECIFIED IN THE PLANS. CONSIDER THE PREDICTED TIDE FLUCTUATIONS OR RIVER FLOWS WHEN DETERMINING THE HEIGHT OF THE CURTAIN.

**FLOTATION:**

1. PROVIDE FLOTATION CONSISTING OF RIGID, CLOSED CELL EXPANDED POLYSTYRENE, ETHAFOAM, OR POLYETHYLENE FLOATS ATTACHED TO THE TOP OF THE SILT CURTAIN ALONG ITS ENTIRE LENGTH. PROVIDE FLOTATION MATERIAL WITH PROTECTION FROM MECHANICAL DAMAGE AND DETERIORATION THAT WOULD CAUSE POLLUTION.
2. EMPLOY FLOTATION THAT PROVIDES THE CURTAIN WITH A MINIMUM OF FREEBOARD WITHOUT GAPS. ENSURE THAT THE BUOYANCY RATIO (WEIGHT OF DISPLACED FLUID TO BARRIER WEIGHT) IS GREATER THAN 3:1.
3. PROVIDE HIGH VISIBILITY COLOR MARKING FOR THE FLOTATION DEVICES.
4. PROVIDE MANUFACTURER-INSTALLED GROMMETS OR EQUIVALENT TO REINFORCE STRESS POINTS AND PROVIDE ATTACHMENT POINTS TO ENSURE PROPER ANCHORING.

**LINES:** PROVIDE ANCHOR LINES AND TOP AND BOTTOM LOAD LINES, AS REQUIRED, THAT ARE MINIMUM 1/2-INCH DIAMETER NYLON ROPE.

**ANCHORS:** PROVIDE CONCRETE ANCHORS IN THE SIZE AND NUMBER REQUIRED TO MAINTAIN THE CURTAIN IN POSITION FOR PROPER AND CONTINUOUS OPERATION ONCE DEPLOYED.

**BALLAST:** PROVIDE BALLAST CHAIN OF MINIMUM 1/2-INCH DIAMETER GALVANIZED STEEL WITH BALLAST CHAIN SEWN INTO A HEM AT THE BOTTOM OF THE CURTAIN AND SECURED TO THE MATERIAL OF THE HEM TO PREVENT SHIFTING OR ACCIDENTAL REMOVAL.

**HANDLING AND INSTALLATION**

1. SILT CURTAIN PLAN:
  - a. SUBMIT A SILT CURTAIN PLAN FOR DEPARTMENT REVIEW AND APPROVAL.
  - b. THE SILT CURTAIN PLAN MUST USE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
  - c. THE SILT CURTAIN MUST BE ANCHORED AND SECURED SUFFICIENTLY TO WITHSTAND WIND, WAVES, PROPELLER WASH, RIVERINE FLOW, AND TIDAL FORCES REASONABLY EXPECTED AT THE SITE.
2. JOINING PANELS/SECTIONS:
  - a. CONNECT OR SEW INDIVIDUAL PANELS/SECTIONS OR SEW TOGETHER IN THE FIELD, FOR EASE OF HANDLING AND TRANSPORTATION.
  - b. DO NOT USE HEAT WELDING METHODS TO JOIN PANELS.
  - c. JOIN THE PANELS IN A MANNER THAT WILL PREVENT SILT, SEDIMENT, DEBRIS, OR TURBIDITY TO MIGRATE FROM THE WORK AREA.
  - d. IF JOINTS ARE SEWN TOGETHER, USE POLYESTER TWINE THREAD HAVING A TENSILE STRENGTH OF 350 LBS, AS DETERMINED BY ASTM 4268, TO MAKE DOUBLE ROW OF STITCHES THAT WILL NOT UNRAVEL IF BROKEN.
3. INSTALL SILT CURTAIN PRIOR TO STARTING IN-WATER WORK AS SPECIFIED IN THE ENVIRONMENTAL PERMITS.
4. ENSURE THAT THE FLOTATION IS SECURED TO THE BOOM TO PREVENT SHIFTING OR SLIPPING OF THE CURTAIN.
5. WEIGHT THE BASE OF THE CURTAIN WITH BALLAST SO THAT IT WILL REMAIN IN A VERTICAL POSITION.
6. PROVIDE ANCHORS IN THE SIZE AND NUMBER REQUIRED TO MAINTAIN THE CURTAIN IN POSITION FOR PROPER AND CONTINUOUS OPERATION ONCE DEPLOYED.
7. ATTACH ANCHOR CHAINS BETWEEN THE ANCHOR LINE AND ANCHOR TO PREVENT LINE FOULING, TO LOWER THE ANGLE OF LOAD PULLING ON THE ANCHOR, AND TO ACT AS A SHOCK ABSORBER.
8. EMPLOY ANCHOR LINE BUOYS TO HELP PREVENT LINE ENTANGLEMENT AND STRESS ON THE BOOM, IF NEEDED.

**INSPECTION**

1. INSPECT FOR VISIBILITY ABOVE THE WATER SURFACE ALONG THE ENTIRE LENGTH OF THE SILT CURTAIN.
2. INSPECT FOR 0.5 FEET OF FREEBOARD ABOVE THE WATER SURFACE DURING CALM CONDITIONS.

**MAINTENANCE**

1. MAINTAIN THE SILT CURTAIN AS REQUIRED IN THE INSTALLATION NOTES.
2. ADJUST FLOTATION TO MAINTAIN VISIBILITY AND FREEBOARD ABOVE WATER SURFACE.

**REMOVAL**

1. THE ENGINEER MUST APPROVE REMOVAL.
2. PREVENT RE-SUSPENSION OF SEDIMENT INTO THE WATER WHEN REMOVING THE CURTAIN. CONDUCT THE REMOVAL DURING PERIODS OF CALM WEATHER. REMOVE THE CURTAIN CAREFULLY TO MINIMIZE THE RELEASE OF TRAPPED SEDIMENT AND DEBRIS. DO NOT DRAG THE CURTAIN WHILE IN CONTACT WITH THE SEA FLOOR OR WATERBODY BOTTOM.

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Date	Description	By

State of Alaska DOT&PF

SILT CURTAIN

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Date 12/2015 X/XX/XX

## **BMP 20.00. Silt Fence**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of Silt Fence is to trap sediment and prevent it from being transported out of the project area to another area, or to a water body.

#### *Description*

Silt Fence is geotextile fabric secured to posts and secured in a trench, and/or with sandbags or drain rock.

#### *Other Names*

Geotextile for Sediment Control, Sediment Barrier.

#### *Applicability*

Silt Fence is used downslope from erosion-susceptible terrain to trap sheet flow run-off before the drainage exits the project site. Adequate space must be provided for pooled water on the uphill side of the fence.

Barrier locations are chosen based on site features and conditions (e.g. soil types, climate, terrain features, sensitive areas, etc.), design plans, existing and anticipated drainage courses, and other available erosion and sediment controls. Typical barrier sites are catchpoints beyond the toe of fill, or on sideslopes above waterways or drainage channels.

Although drainage in contact with the fence is to some degree filtered by the geotextile, the fabric's small pores not only block larger-sized eroded particles but also severely restrict water exfiltration rates and behaves like a dam. For this reason, Silt Fences are not to be used for concentrated flows in continuous flow streams or ditches; or as check dams.

Silt Fence can be installed in standing water to provide time for particles to settle.

Silt Fences are used to encircle stockpiled erodible material to prevent off-site sediment transport.

Since Silt Fence installation can cause significant damage, alternative best management practices (BMPs) should be considered for installation instead of Silt Fence. Use Fiber Rolls, compost socks, brush bundles to filter small amounts of sediment in shallow gullies or ditches. Temporary settlement

basins, gravel berms, or foam barriers can be used as alternatives to Silt Fence.

Do not use Silt Fence on airport runways, taxiways, aprons, or within the Runway Safety Areas.

#### *Selection Considerations*

Use of sediment control measures and the level of effort should be commensurate with the potential problem. Silt Fence is not to be used solely as a project delineator (see Site Delineation, BMP-55).

- Use of a Silt Fence sediment control measure is usually more complex, expensive, and maintenance-prone than other sediment control measures.
- Consider impacts of the fence installation, maintenance, and removal on sensitive areas needing protection (e.g. avoid equipment encroachment on wetlands).
- Consider potential undesirable effects of fence placement (e.g. a trench in ground that will not readily “heal” after fence removal; undesirable effects of extent or depth of ponded water, etc.)
- An equipment access route and space for fence installation, maintenance, and removal must be available without encroaching into sensitive areas or off the project limits.
- Wire reinforcement can be used with Silt Fence by backing the geotextile fabric with chain link, polymeric mesh, or welded wire fencing. Below is a list of considerations for adding wire reinforcement to Silt Fence installation:
  - Consider using wire reinforcement and longer posts to resist overturn.
  - Consider using wire reinforcement in areas of high wind.
  - Consider using wire reinforcement for standing water installations.

#### *Types of Silt Fence for Purchase:*

- *With Pockets:* Sewn-in pocket Silt Fence is geotextile that has factory-sewn pockets for the posts and does not require post fasteners.
- *Without Pockets:* Silt Fence without pockets is geotextile fabric that requires fasteners to attach

the fabric to the posts or Silt Fence that is available with posts pre-attached.

- *Wire Reinforcement:* When Silt Fence is wire reinforced, the geotextile fabric is backed with chain link or welded wire fencing.

*Methods of Installation:*

- *Trenchless:* Drive support posts into the ground, attach geotextile on the upslope side of the line of stakes with a portion lying flat on the ground, and place clean rock or sandbags on the geotextile. Using sandbags to anchor the fence bottom is a less desirable method because of the tendency for undermining. Require removal of the rock or sandbags when the fence is removed.
- *Trench Key:* Drive support posts into the ground, excavate a trench on the uphill side along the line of the stakes, attach geotextile, and bury fence bottom. Use soil to backfill trench and compact to secure fence bottom. Compacted soil is preferred to gravel fill.
- *Machine Slice:* This method requires a Silt Fence installation machine or attachment. The machine utilizes a blade that plows or slices the fabric directly into the soil minimizing soil disturbance. Displaced soil must be manually backfilled into the slice before the tractor is used to mechanically compact the soil.

*Design*

Locate Silt Fence at a distance from the base of the slope or pile such that there is space for temporary storage of potential accumulated material. Consider a space of 4 feet for worker access if feasible. The grade and length of slope as well as soil erodibility must be considered when specifying silt fence. If the slope is steep or long, consider intermediate slope breaks.

Below are design considerations for Silt Fence that is not wire-reinforced:

- *Design Life:* 1 season (6 months) or less.
- *Contributing Sheet Flow Drainage Area:* Not to exceed 0.25 acres/100 ft. of fence.
- *Maximum Height of Ponding Water:* 18 in.

*Guidelines for Maximum Slope Length for Silt Fence:*

Slope (H:V)	Length of Slope Above Fence, Assumes 30 In High Fence
10:1	150 ft.
6:1	85 ft.
5:1	70 ft.
4:1	55 ft.
3:1	40 ft.
2:1	25 ft.
1:1	15 ft.

*Relationship to Other Erosion and Sediment Control Measures*

Sediment control measures are secondary to erosion prevention or soil stabilizing measures. Silt Fence may be used as part of a sequential system with other temporary or permanent measures such as vegetation, check dams, settling ponds, etc. Occasional flow velocity increases may be offset using corrective measures such as rock berms or other redirecting energy absorbers.

*Common Failures or Misuses*

- Inappropriate for intended function (e.g. used for check dam, flow diversion, diversion dam, etc.).
- Installation of Silt Fence in streams or concentrated flow.
- Use as a mid-slope protection on slopes greater than 4:1.
- Use as a perimeter control in high flow areas.
- Field-sewn seams.
- Use of incorrect type of fabric.
- Loose or sagging fabric between posts.
- Fence improperly attached or fastened to posts.
- Posts not driven deep enough into the ground.
- Posts spaced too far apart.
- Posts installed on incorrect side of fence.
- Placement of overlapped joints across pooled drainage areas.
- Fence allows spillover or bypass.
- Soil is not compacted next to fence after backfilling trench, allowing water to flow underneath.

- Trenches are too shallow to anchor the Silt Fence below ground or trenchless construction failure.
- Slope erosion occurs below the fenceline due to drainage that bypasses the barrier end, or water build-up that “blows out” a poorly-secured fence bottom.
- Fence function impairment due to sediment build-up, maintenance neglect, etc.
- Fence topples due to poor installation and/or high levels of impounded backup water or sediment.
- Uneven distribution of pooled drainage along non-level fenceline surface reduces efficiency.
- End of fence is not “J-hooked” upslope allowing water to run around the end.
- Poor support system (e.g. soil too rocky to secure posts, fabric stapled to trees, etc.).
- Installation of Silt Fence in a long continuous run.

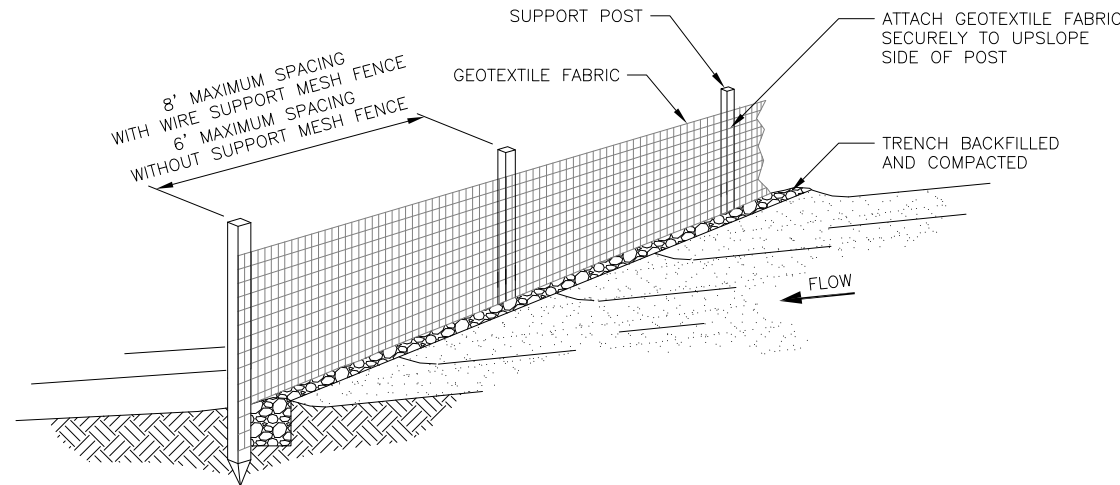
### SPECIFICATIONS

#### Standard Specification

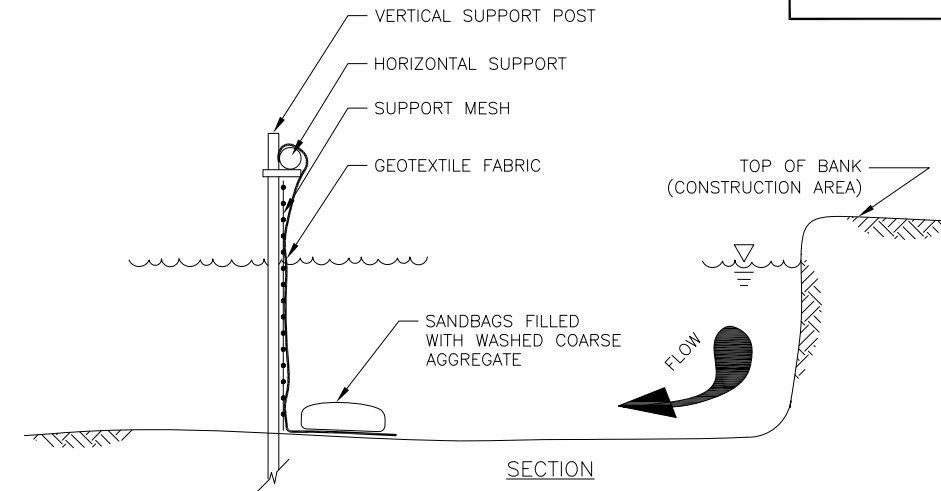
- 633 – Silt Fence
- 729-2.04 - Geosynthetics

#### Drawing

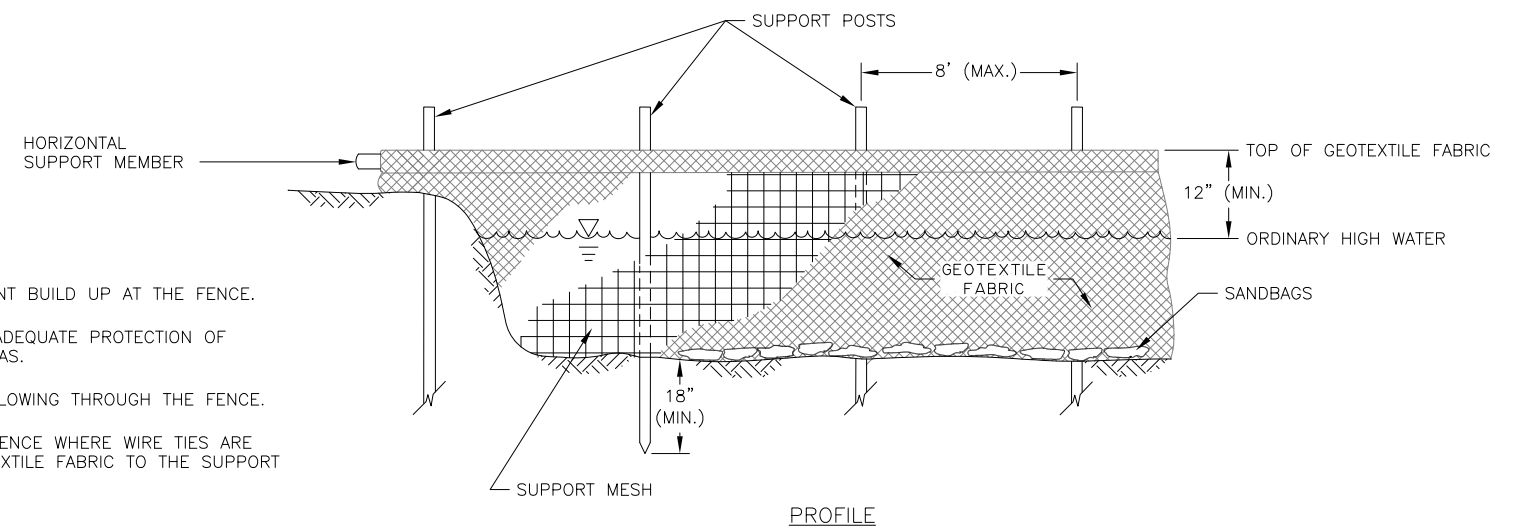
- BMP-20.00 Silt Fence (Sheets 1 and 2)



**GENERAL INSTALLATION**  
NOT TO SCALE



**SECTION**



**PROFILE**

**STANDING WATER INSTALLATION**  
NOT TO SCALE

**SILT FENCE GENERAL NOTES:**

**MATERIALS**  
SILT FENCE: SEE SPECIFICATION SECTION 633, SILT FENCE.

**INSTALLATION**

1. INSTALL FENCELINE ALONG A LEVEL CONTOUR AND PERPENDICULAR TO ANTICIPATED SHEET FLOW DRAINAGE PATH(S).
2. ORIENT END SECTIONS UPHILL SLIGHTLY IN A J-HOOK TO PREVENT WATER FROM GOING AROUND THE SILT FENCE.
3. DO NOT EXCEED 100 FEET FOR EACH 1/4-ACRE OF DRAINAGE AREA AND DO NOT EXCEED 500 FEET REGARDLESS OF DRAINAGE AREA.
4. THE DIFFERENCE IN ELEVATION BETWEEN THE HIGHEST AND LOWEST POINT ALONG THE TOP OF THE SEDIMENT FENCE SHALL NOT EXCEED ONE-THIRD THE FENCE HEIGHT.
5. WHERE GROUND SURFACES ARE UNEVEN, INSTALL SHORTER FENCES FOLLOWING CONTOURS (RATHER THAN INSTALLING ONE LONG, CONTOUR-CROSSING FENCE THAT DIRECTS DRAINAGE TO ACCUMULATE IN LOW SPOTS).
6. LOCATE FENCE 3 TO 10 FEET BEYOND TOE OF FILL TO LEAVE ROOM FOR A BROAD, SHALLOW SEDIMENTATION POOL AND FOR EQUIPMENT ACCESS DURING FENCE MAINTENANCE AND REMOVAL.
7. IF FEASIBLE, LEAVE A MINIMUM OF 3.5-FOOT BUFFER BETWEEN FENCING AND SENSITIVE RECEIVING AREAS.
8. PLACE GEOTEXTILE ON THE UPSLOPE SIDE OF POSTS OR, WHEN USING SILT FENCE WITH SEWN-IN POCKETS, PLACE POCKETS ON THE UPSLOPE SIDE OF THE FENCE.
9. EXCAVATE TRENCHES NOT WIDER OR DEEPER THAN NECESSARY FOR PROPER INSTALLATION OF THE SILT FENCE. DO NOT EXCAVATE TRENCHES IN PERMAFROST.
10. AT JOINTS, ROLL ENOUGH OF THE ENDS OF SECTIONS TOGETHER AT SUPPORT POST SUCH THAT THE JOINT PREVENTS SILT-LADEN WATER FROM ESCAPING THROUGH THE FENCE.
11. IF USING THE FRONT WHEEL OF A TRACTOR OR ROLLER, COMPACT THE UPSTREAM SIDE FIRST, THEN EACH SIDE TWICE (A TOTAL OF FOUR TRIPS).

12. KEEP FENCE FABRIC TAUT.

13. WHEN USING SUPPORT MESH, ATTACH GEOTEXTILE TO THE SUPPORT MESH WITH FASTENERS SPACED EVERY 24 INCHES AT THE TOP AND MIDSECTION.

**MACHINE SLICE INSTALLATION (NOT IN PERMAFROST)**

1. USE A SILT FENCE INSTALLATION MACHINE OR ATTACHMENT TO PLOW OR SLICE THE FABRIC DIRECTLY INTO THE SOIL.
2. BACKFILL SOIL LOOSENED BY THE BLADE INTO THE SLICE AND USE THE TRACTOR TO MECHANICALLY COMPACT THE SOIL.
3. TUCK FABRIC DEEPER INTO THE GROUND WHERE NECESSARY.
4. INSTALL SUPPORT POSTS ALONG THE LENGTH OF THE FENCE FOLLOWING SIMILAR PROCEDURES FOR THE TRENCH METHOD.

**WINTER INSTALLATION (NOT IN PERMAFROST)**

1. DIG A TRENCH.
2. BACKFILL TRENCH WITH THE LOOSENED SOIL AND COMPACT SOIL PRIOR TO POST INSTALLATION.
3. MOISTEN THE BACKFILLED SOIL SO IT WILL FREEZE UP AND GRIP THE SILT FENCE FABRIC IN PLACE.
4. DO NOT LEAVE LARGE FROST CHUNKS AS THE BACKFILL.

**INSPECTION**

1. INSPECT FENCELINE FOR CONTINUITY, COLLAPSE, UNDERMINED AREAS, AND DAMAGE. DO NOT EXCAVATE TRENCHES IN PERMAFROST.
2. INSPECT FABRIC FOR TEARS, PUNCTURES, FRAYING, WEATHERING, AND COMPROMISED INTEGRITY.
3. CONFIRM THAT THE FENCE POSTS ARE SECURE.
4. ENSURE THE FENCE IS KEYED IN AND THAT THERE IS NO UNDERCUTTING.
5. LOOK FOR EVIDENCE OF SEDIMENT OR EROSION FLOW LEADING OFF THE DOWNHILL EDGE OF THE FENCE. (THIS MAY BE AN INDICATOR OF DRAINAGE BYPASS OR FENCE UNDERMINE.)

6. NOTE DEPTH OF SEDIMENT BUILD UP AT THE FENCE.

7. LOOK FOR SIGNS OF INADEQUATE PROTECTION OF OFF-SITE SENSITIVE AREAS.

8. CHECK FOR SEDIMENT FLOWING THROUGH THE FENCE.

9. CHECK FOR HOLES IN FENCE WHERE WIRE TIES ARE USED TO SECURE GEOTEXTILE FABRIC TO THE SUPPORT POST.

**MAINTENANCE**

1. INSTALL ALTERNATE OR ADDITIONAL BMPS AS NEEDED TO PREVENT UNDESIRABLE SEDIMENTATION OF SENSITIVE AREAS.
2. REPLACE DAMAGED FABRIC.
3. REMEDY FENCE SAGS AS NEEDED.
4. REMOVE ACCUMULATED SEDIMENT BEFORE IT ACCUMULATES TO ONE-HALF THE CAPACITY, OR ONE-THIRD OF THE AVAILABLE STORAGE IF PROTECTING A WATER BODY OR STORM DRAIN INLET.
5. DISPOSE OF SILT WASTE IN APPROVED MANNER/LOCATION (TYPICALLY IN A NON-EROSION AREA).
6. IF THERE IS EVIDENCE OF EXCESSIVE SEDIMENTATION AGAINST THE SILT FENCE, PROVIDE INCREASED EROSION CONTROL UPSLOPE.

**REMOVAL**

1. WHEN DISTURBED AREAS ARE PERMANENTLY STABILIZED OR SEDIMENT PROTECTION IS NO LONGER NEEDED, COLLECT AND PROPERLY DISPOSE OF ACCUMULATED SEDIMENT OR SEED IN PLACE.
2. CUT FABRIC AT GROUND LEVEL AND REMOVE SUPPORTS.
3. DISCARD FILTER FENCE AS APPROVED. AVOID DAMAGE TO SENSITIVE AREAS (E.G. WETLAND OR SURFACE WATER).

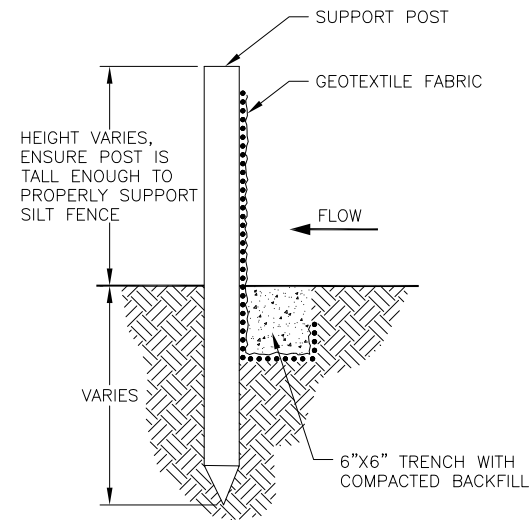
**STANDING WATER NOTES:**

- INSTALLATION**
1. DRIVE SUPPORT POSTS INTO THE GROUND AND ATTACH A HORIZONTAL SUPPORT MEMBER.
  2. ATTACH SUPPORT MESH AND GEOTEXTILE ON THE UPSLOPE SIDE OF THE STAKES, EXTEND GEOTEXTILE ON THE GROUND UPSLOPE OF THE FENCE, AND ANCHOR THE GEOTEXTILE WITH SANDBAGS OR EQUIVALENT TO PREVENT GAPS.
  3. SPACE SUPPORT POSTS A MAXIMUM OF 8 FEET APART.
  4. KEEP FENCE FABRIC TAUT.

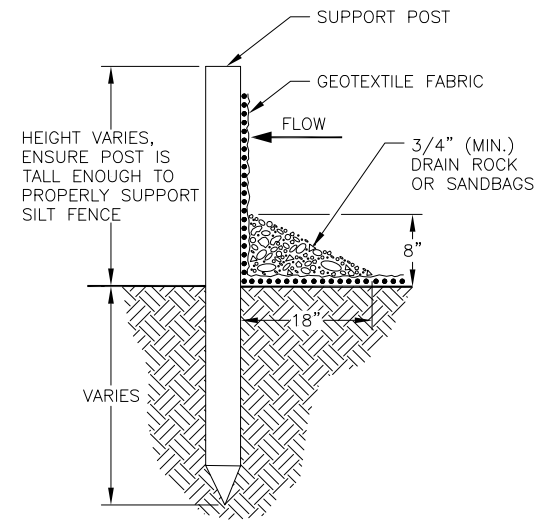
REVISIONS		
Date	Description	By

State of Alaska DOT&PF  
**SILT FENCE**  
 (NOTES, GENERAL  
 INSTALLATION, & STANDING  
 WATER INSTALLATION)  
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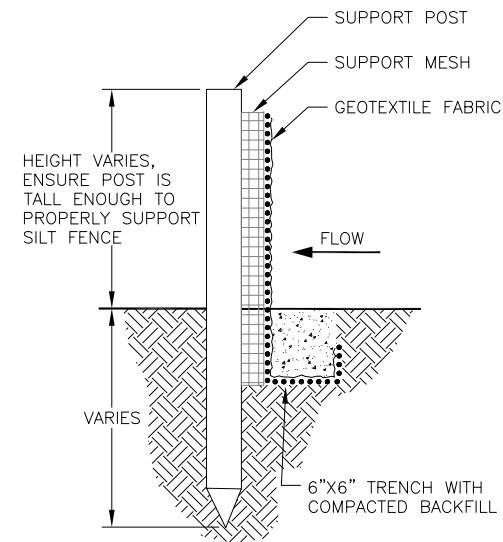




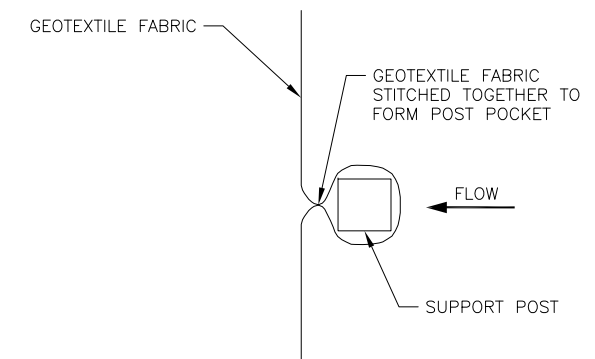
TRENCH DETAIL  
NOT TO SCALE



TRENCHLESS DETAIL  
NOT TO SCALE



SUPPORT MESH REINFORCED  
FABRIC DETAIL  
NOT TO SCALE



SEWN-IN POCKET DETAIL  
NOT TO SCALE

TRENCH NOTES:  
INSTALLATION

1. DRIVE SUPPORT POSTS INTO THE GROUND.
2. FOLLOW MANUFACTURER'S SPECIFICATIONS FOR POST BURIAL DEPTH.
3. EXCAVATE A TRENCH ON THE UPHILL SIDE ALONG THE LINE OF THE STAKES.
4. ATTACH GEOTEXTILE TO STAKES AND BURY GEOTEXTILE BOTTOM.
5. BACKFILL TRENCH AND COMPACT TO SECURE FENCE BOTTOM.

TRENCHLESS NOTES:  
MATERIALS

CLEAN ROCK OR SANDBAGS.

INSTALLATION

1. DRIVE SUPPORT POSTS INTO THE GROUND.
2. ATTACH GEOTEXTILE ON THE UPHILL SIDE ALONG THE LINE OF THE STAKES.
3. EXTEND GEOTEXTILE ON THE GROUND UPHILL OF THE FENCE.
4. PLACE DRAIN ROCK ON GEOTEXTILE.

REMOVAL

1. WHEN SILT FENCE IS LOCATED IN WETLANDS OR SENSITIVE AREAS, REMOVE CLEAN ROCK OR SANDBAGS WHEN THE SILT FENCE IS REMOVED.

SUPPORT MESH REINFORCED FABRIC NOTES:  
INSTALLATION

1. DRIVE SUPPORT POSTS INTO THE GROUND.
2. EXCAVATE A TRENCH ON THE UPHILL SIDE ALONG THE LINE OF THE STAKES. DO NOT EXCAVATE TRENCHES IN PERMAFROST.
3. EXTEND SUPPORT MESH A MINIMUM OF 3 INCHES INTO THE TRENCH.
4. ATTACH GEOTEXTILE TO STAKES AND BURY GEOTEXTILE BOTTOM.
5. BACKFILL TRENCH AND COMPACT TO SECURE FENCE BOTTOM.

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State of Alaska DOT&PF

SILT FENCE  
(DETAILS)

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## **BMP 21.00 & 22.00. Slope Drain**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of a Slope Drain is to temporarily or permanently conduct concentrated stormwater run-off safely down the face of a cut or fill slope without causing erosion on or below the slope.

#### *Description*

A Slope Drain is a pipe, flexible tubing, channel created with barriers and lining, or a rock flume that extends from the top to the bottom of a cut or fill slope to prevent gullies, channel erosion, and saturation of slide-prone or erodible soils on exposed soil slopes. With the exception of a rock flume, these are temporary measures.

- *Piped:* The pipe material is typically corrugated plastic or flexible tubing.
- *Barrier:* Barriers placed parallel to the slope to form a temporary channel directing water down a geotextile lined slope. Rock may be added to the flume to provide added protection and to slow the velocity of water.
- *Rock Flume:* A riprap-lined channel to convey water down a relatively steep slope without causing erosion problems on or below the slope.

#### *Other Names*

Downdrain, Drop Pipe, Pipe Slope Drain, Rock Chute, Rock Downdrain, Rock Flume.

#### *Applicability*

Slope Drains are temporary measures that are used during grading operations until the permanent drainage structures are installed, and until the slopes are permanently stabilized. They can also be used to drain water collected from aquifers, divert small seasonal streams, and in connection with down spouts and roof drains are used to divert flows from the construction area. Slope Drains allow clean water to be kept separate from sediment-laden water. Slope Drains are used in conjunction with temporary diversion dikes along the top edge of newly constructed slopes that function to direct stormwater run-off into the Slope Drain. Energy dissipation is required at the bottom of the slope to prevent erosion at the outlet of the Slope Drain.

Rock Flume Slope Drains are permanent structures. If there is a need for the Permanent Slope Drain, it needs to be included in the plans stamped by the designer.

#### *Selection Considerations*

- Divert stormwater to the Slope Drain using foam barriers, compost berms or socks, sandbags, diversion ditches, or equivalent diversion materials.
- Slope Drains should be used in conjunction with diversion berms to convey run-off from the drainage area.
- Provide both inlet and outlet protection to minimize erosion at these locations.
- Provide sediment trapping facilities for Slope Drains conveying sediment-laden water.
- Adjust the length of the Slope Drain when the cut and fill slopes are extended.
- Thrust blocks should be installed anytime 90 degree bends are utilized. Depending on size of pipe and flow, these can be constructed with sandbags, fence posts and wire, or similar sturdy temporary devices.

#### *Design*

*Design Life:* One (1) season (6 months) or less

*Contributing Sheet Flow:* Use a configuration appropriate for the anticipated flow.

*Capacity:* Peak run-off from a 2-year 24-hour storm, with area cover considered; or the design discharge of the up-gradient water conveyance structure, whichever is greater. Rock flumes with a drainage area between 5 and 10 acres are lined with Class II Riprap, while rock flumes with a drainage area less than 5 acres can be lined with Class I Riprap.

*Diversion Barrier Height:* Minimum 12 inches higher than the top of the drain pipe and greater than or equal to the height of the barrier for the Slope Drain.

*Outlet section:* Stormwater discharge energy must be dissipated to prevent scour and erosion at the outlet. Silt control bags, temporary lining of the discharge

area (e.g., plastic sheeting or riprap), or dispersal pipes are some of the methods that may be used.

#### *Relationship to Other Erosion and Sediment Control Measures*

Slope Drains are used with temporary diversion dikes to facilitate channeling of run-off into the structure. Slope Drains can be used in conjunction with an Interception Ditch to transport stormwater that has been redirected around a surface that is susceptible to erosion. Inlet and outlet protection are required to minimize erosion and scour.

#### *Common Failures or Misuses*

##### *General*

- Piping of water through the berm at the entrance area.
- Incorrectly locating the Slope Drain for the flow that is actually occurring.
- Materials placed on, or construction traffic across Slope Drain, resulting in damage to the structure.

##### *Piped*

- Failure to compact soil around and under the pipe entrance, resulting in undercutting.
- Slope Drain sections not securely fastened together; fittings not water tight, resulting in leakage.
- Slope Drain sections not securely anchored to the slope, resulting in displacement of the structure.
- Under-sizing the pipe for the contributing area.

##### *Barrier*

- Unless properly secured to the ground, run-off can flow underneath the barrier and cause failure.
- Unless properly secured, barriers can be dislodged or transported by high flows.

##### *Rock Flume*

- Using rounded rock
- Sloughing.
- Stone size too small or backslope too steep, resulting in stone displacement.

- Sediment accumulation in flume channel, resulting in reduced capacity.
- Channel width too narrow, resulting in overtopping and erosion.

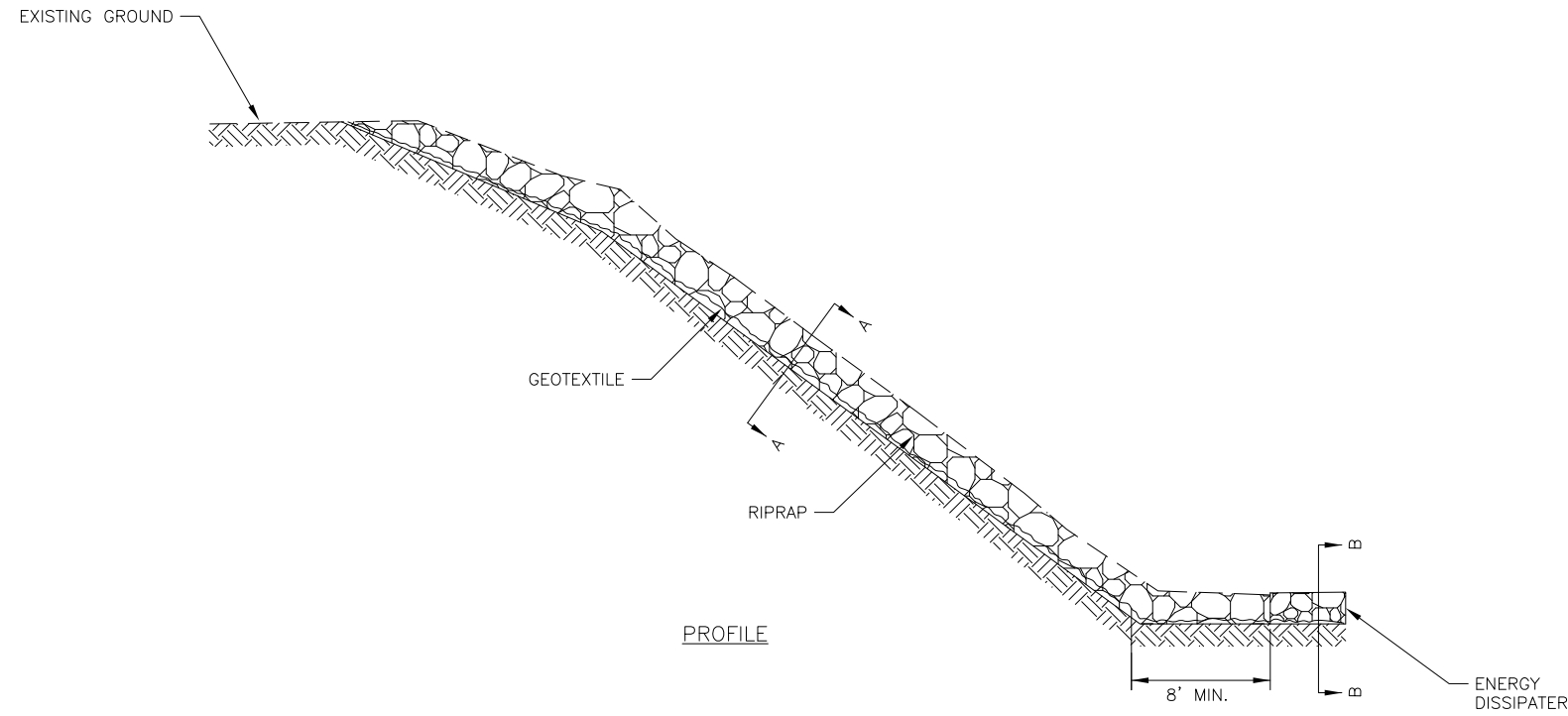
#### SPECIFICATIONS

##### Standard Specification

- 681 – Slope Drain

##### Drawings

- BMP-21.00 Slope Drain (Rock Flume)
- BMP-22.00 Slope Drain (Pipe)



ROCK FLUME SLOPE DRAIN NOTES:

MATERIALS

**RIPRAP:** RIPRAP, CLASS I OR CLASS II, (SECTION 611)

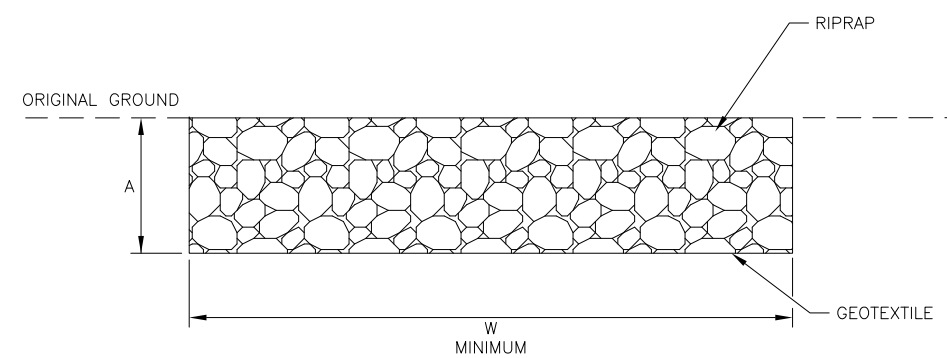
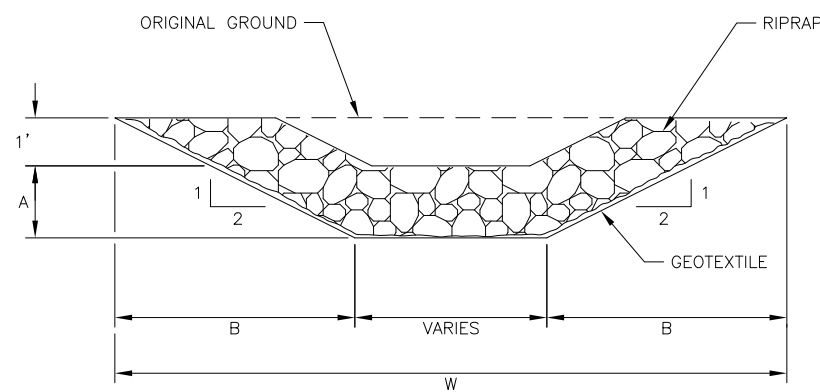
**GEOTEXTILE:** GEOTEXTILE LINER (SECTION 631 AND 729-2.02).

**ENERGY DISSIPATOR:** PIPE TEE, RIPRAP PAD, OR EQUIVALENT PIPE DISSIPATION.

INSTALLATION

1. EXCAVATE TO PLACE ROCK SO THAT THE TOP OF FLUME SIDES ARE AT ORIGINAL GROUND.
2. IF ROCK IS ENCOUNTERED DURING FLUME CONSTRUCTION, ROCK SHALL BE EXCAVATED TO FINISHED FLUME LEVEL AND NO RIPRAP OR GEOTEXTILE SHALL BE REQUIRED.
3. SHAPE THE CHANNEL TO PROPER GRADE AND CROSS-SECTION AS SHOWN IN THE PLANS, WITH NO ABRUPT DEVIATIONS FROM DESIGN GRADE OR HORIZONTAL ALIGNMENT.
4. PLACE GEOTEXTILE PRIOR TO PLACEMENT OF RIPRAP.
5. INSTALL PERPENDICULAR TO SLOPE CONTOURS.
6. EXTEND THE DRAIN BEYOND THE TOE OF THE SLOPE AND PROVIDE RIPRAP OR GEOTEXTILE OUTLET PROTECTION.
7. DISCHARGE TO A STABILIZED WATERCOURSE, SEDIMENT RETENTION FACILITY, OR STABILIZED OUTLET.

RIPRAP TYPE	DIMENSIONS	
	A	B
CLASS I	1.5'	5'
CLASS II	3.0'	8'



SECTION A-A

SECTION B-B

ROCK FLUME SLOPE DRAIN  
NOT TO SCALE

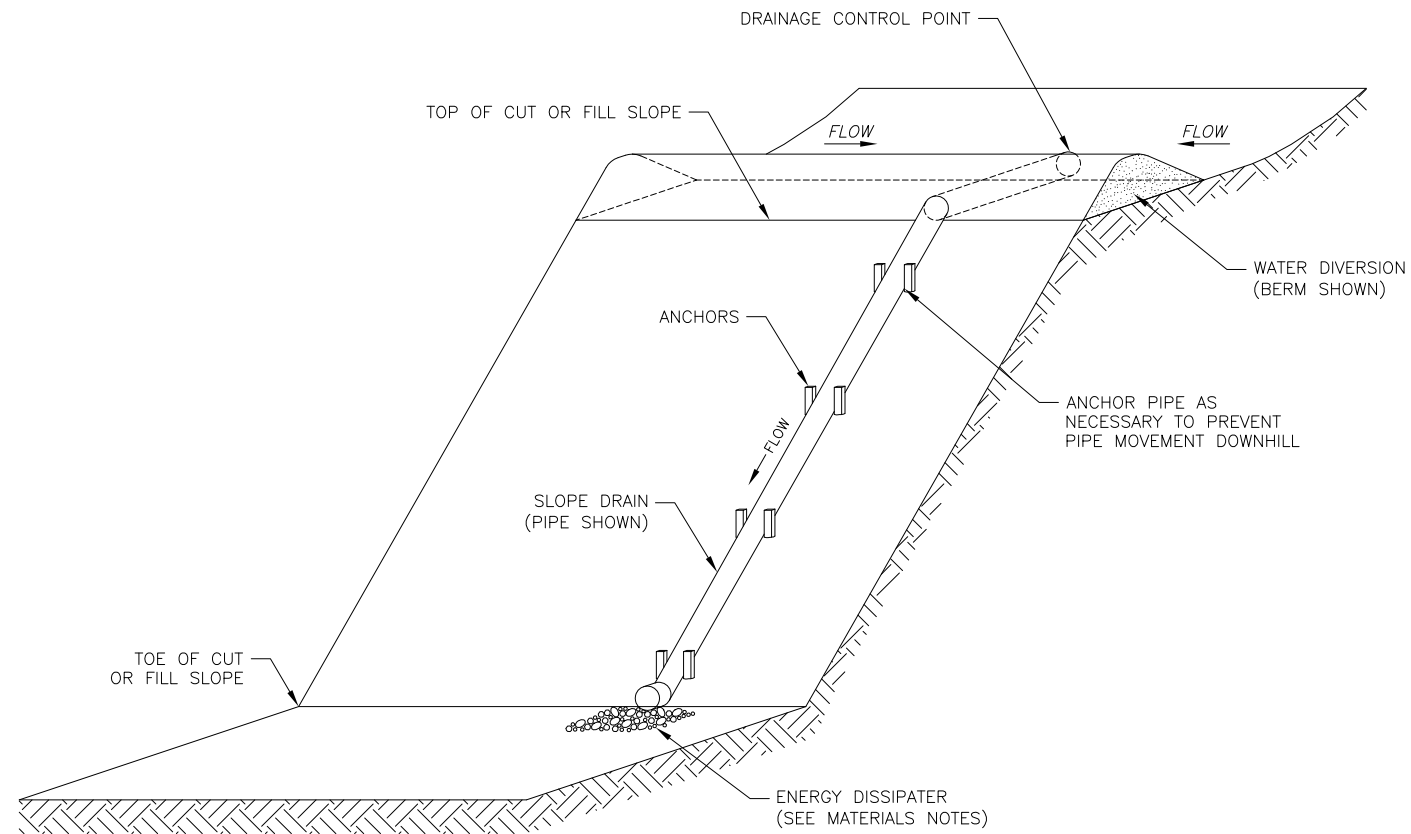
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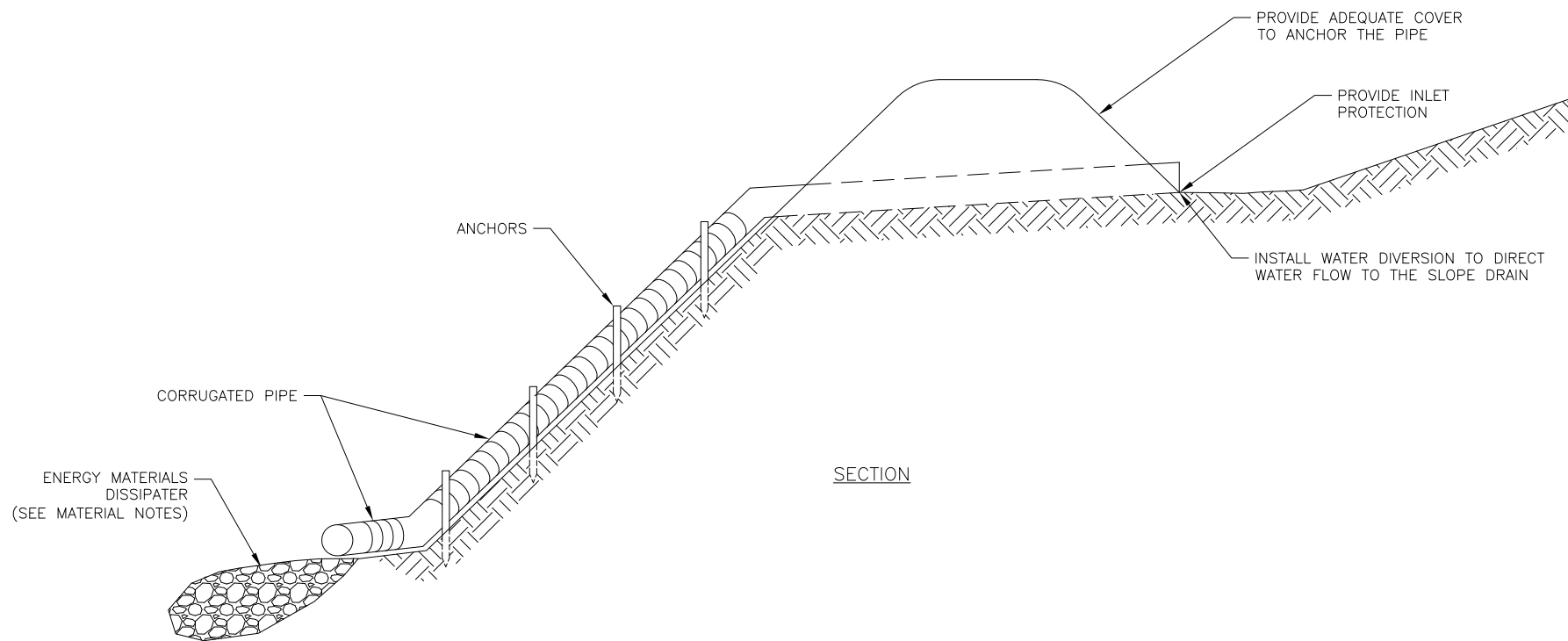
SLOPE DRAIN  
(ROCK FLUME)

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PERSPECTIVE



SECTION

PIPE SLOPE DRAIN  
NOT TO SCALE

**PIPE SLOPE DRAIN NOTES:**

**MATERIALS**  
**WATER DIVERSION:** EARTHEN BERM, FIBER ROLL, PREFABRICATED BARRIER SYSTEM, OR EQUIVALENT.

**ENERGY DISSIPATER:** PIPE TEE, RIPRAP PAD, OR EQUIVALENT ENERGY DISSIPATION.

**SLOPE DRAIN:** HEAVY DUTY FLEXIBLE MATERIAL, SUCH AS CORRUGATED PLASTIC PIPE OR PLASTIC TUBING. AS AN ALTERNATIVE, TWO BARRIERS WITH A CHANNEL LINING BETWEEN THEM TRENCHED AT THE TOP OF THE SLOPE CAN BE USED. SEE PREFABRICATED BARRIER SYSTEM BMP-13.00, COMPOST SOCK BMP-05.00, OR EQUIVALENT BARRIER.

**INLET SECTION:** STANDARD FLARED END SECTION FOR METAL PIPE CULVERTS, OR GEOTEXTILE FOR INLET PROTECTION.

**ANCHORS:** GROMMETS, STAKES, ANCHORS, OR EQUIVALENT FASTENERS.

**INSTALLATION**

1. PLACE SLOPE DRAINS ON UNDISTURBED GROUND OR WELL-COMPACTED FILL AT LOCATIONS SPECIFIED ON THE PLANS.
2. ENSURE THE DRAINAGE CONTROL POINT AT THE TOP OF THE SLOPE IS AT THE LOWEST POINT ALONG THE BARRIER.
3. INSTALL PERPENDICULAR TO SLOPE CONTOURS.
4. EXTEND THE DRAIN BEYOND THE TOE OF THE SLOPE AND PROVIDE RIPRAP OR GEOTEXTILE OUTLET PROTECTION.
5. CONSTRUCT THE TOP OF THE DIVERSION BERM 12 INCHES ABOVE THE TOP OF THE SLOPE DRAIN ENTRANCE.
6. DISCHARGE TO A STABILIZED WATERCOURSE, SEDIMENT RETENTION FACILITY, OR STABILIZED OUTLET.
7. INSTALL INLET PROTECTION USING END SECTION FOR PIPES OR GEOTEXTILE.
8. USE WATERTIGHT FITTINGS AT ALL SLOPE DRAIN CONNECTIONS.
9. SECURELY ANCHOR THE EXPOSED SECTION OF THE PIPE AT 10-FOOT SPACING.
10. ANCHOR INLET SECURELY WITH BERM OR SANDBAGS.

**INSPECTION**

1. INSPECT THE PIPE FOR BREAKS OR BLOCKAGE.
2. CHECK FOR ANY DAMAGED OR DISPLACED ANCHORS.
3. INSPECT FOR EROSION AROUND THE INLET AND OUTLET THAT COULD RESULT IN UNDERCUTTING OR BYPASSING.

**MAINTENANCE**

1. INSTALL A HEADWALL IF NECESSARY TO CONTROL EROSION AROUND THE INLET.
2. REPAIR ANY BREAKS IN THE PIPE.
3. TIGHTEN FITTINGS AT LEAKING CONNECTION POINTS.
4. CLEAR ANY CLOGS, DEBRIS, OR BLOCKAGE THAT REDUCE FLOW THROUGH THE PIPE.
5. REPAIR ANY EROSION AROUND THE INLET OR OUTLET; INSTALL RIPRAP OR SANDBAGS IF NECESSARY.

**REMOVAL**

1. AFTER THE SLOPE IS PERMANENTLY STABILIZED AND THE PERMANENT DRAINAGE SYSTEM IS INSTALLED, REMOVE THE SLOPE DRAINS AND PERMANENTLY STABILIZE THE REMAINING DISTURBED AREAS.

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State of Alaska DOT&PF

**SLOPE DRAIN  
(PIPE)**

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## **BMP 23.00 & 24.00. Stabilized Construction Exit**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Stabilized Construction Exits are used to clean mud and sediment from vehicle tires, minimizing the amounts transported off-site from construction projects.

#### *Description*

A Stabilized Construction Exit provides a stabilized rock area or pad underlined with a geotextile and located where traffic exits the construction site.

#### *Other Names*

Vehicle Tracking Exit/ Entrance, Construction Exit, Construction Entrance

#### *Applicability*

Stabilized Construction Exits are necessary for projects where sediment or mud can be tracked off-site. Stabilized Construction Exits are also applicable for projects adjacent to waters of the U.S., where poor soils have been encountered, or where dust is a problem during dry weather conditions.

#### *Selection Considerations*

Stabilized Construction Exits should be installed at project access points prior to commencing major grading operations.

- Limit exits to the project.
- Avoid exits that have steep grades or are located where sight distance may be a problem.
- Slope exit towards the project where possible to retain sediment on-site.
- Provide drainage to carry water to sediment trap or other suitable outlet.
- Design exit for heaviest/longest vehicles and equipment to be used on-site.
- Exit shall be a minimum length to provide for three complete revolutions of the largest vehicle tires and 12 feet wide.
- Use fencing as necessary to direct traffic to the exit.
- Construct exit on a firm compacted subgrade when practicable.

- Avoid crossing sidewalks or back-of-walk drains.
- Avoid constructing exits at curves in public roads.
- Separation geotextile may be placed under the Stabilized Construction Exit to prevent fine sediment from pumping up into the exit structure.
- If project conditions determine the need for Stabilized Construction Exits at specific locations, provide the location on the plans.

#### *Relationship to Other Erosion and Sediment Control Measures*

Stabilized Construction Exits may be used in combination with street sweeping and tire washing to minimize the amount of sediment transported off-site.

#### *Common Failures or Misuses*

- Failure to periodically “top dress” (provide additional rock) when sediment accumulates on the surface.
- Failure to repair and/or clean out any structures used to trap sediment.
- Failure to provide adequate depth and length of rock.
- Not having a Stabilized Construction Exit and using street sweeping as a substitute.
- Use of asphalt concrete grindings, crushed concrete, cement, or calcium chloride resulting in an increase in pH levels in stormwater.

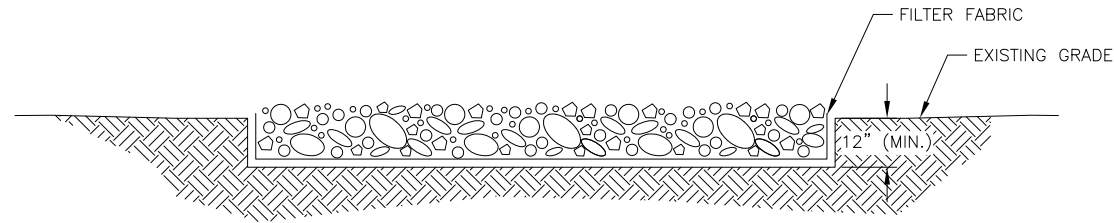
### SPECIFICATIONS

#### Standard Specification

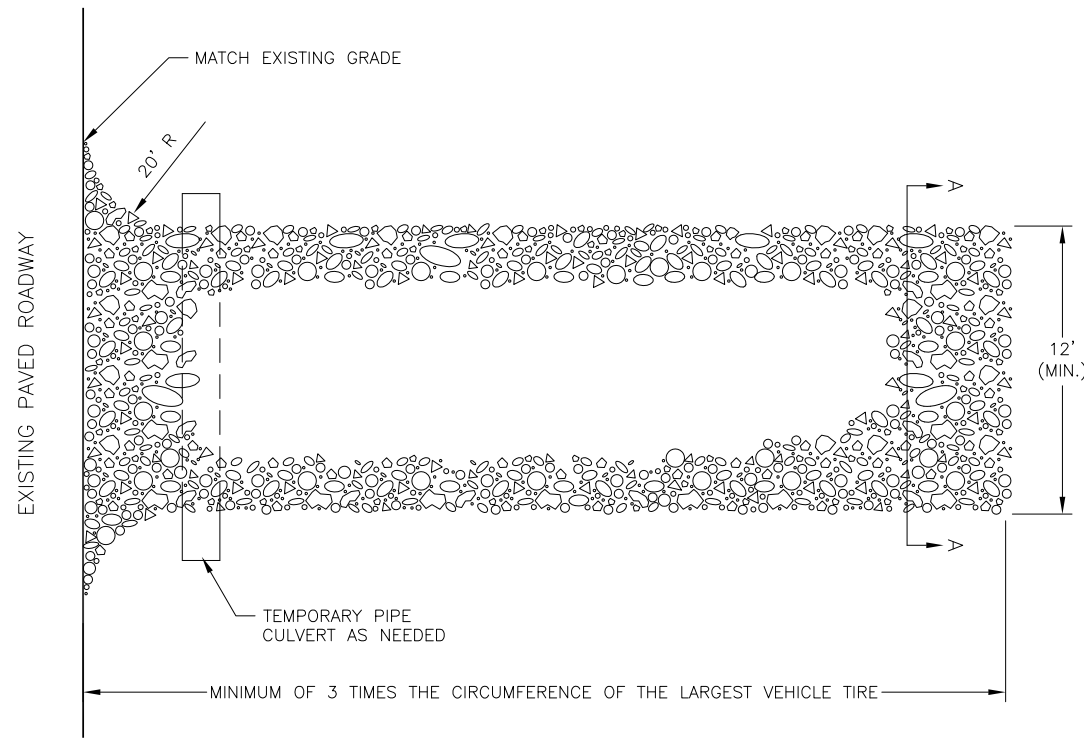
- 682 – Stabilized Construction Exit

#### Drawing:

- BMP-23.00 Stabilized Construction Exit (Sheets 1 of 2)
- BMP-24.00 Stabilized Construction Exit (Metal Plate, Sheet 2 of 2)



SECTION A-A



PLAN

**ROCK CONSTRUCTION EXIT**  
NOT TO SCALE

ROCK CONSTRUCTION EXIT NOTES:

MATERIALS

ROCK: 2- TO 3-INCH COARSE AGGREGATE OR 3- TO 6-INCH QUARRY SPALL OR ANGULAR ROCK, WHICHEVER IS APPROPRIATE TO THE PROJECT FLEET.

INSTALLATION

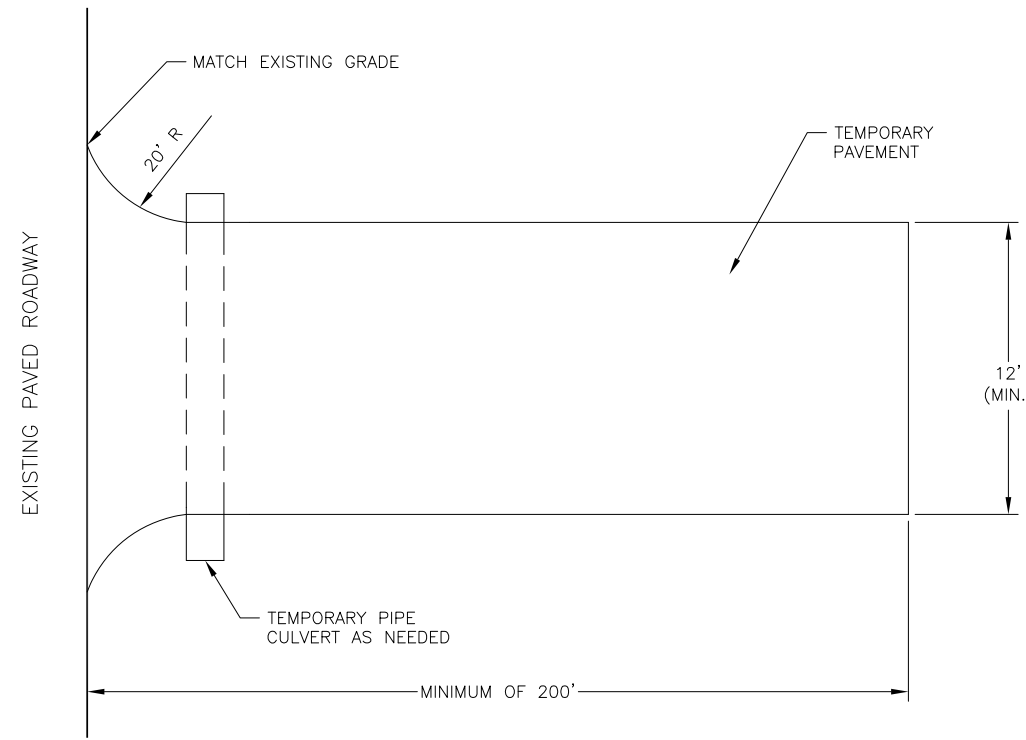
1. PLACE THE FILTER FABRIC AND ROCK TO THE SPECIFIC GRADE SHOWN ON THE PLANS.

MAINTENANCE

1. REMOVE ACCUMULATED SEDIMENT OR MUD.
2. REPLACE ROCK MATERIAL WHEN SURFACE VOIDS ARE FILLED WITH SEDIMENT. REPLACE FABRIC AS NEEDED.
3. TOP DRESS WITH 2 TO 3 INCHES OF COARSE AGGREGATE OR 3- TO 6-INCH COARSE ROCK WHEN THE PAD BECOMES LADEN WITH SEDIMENT.

INSPECTION

1. INSPECT FOR ROCK THAT HAS BEEN DISPLACED FROM THE PAD.



PLAN

**TEMPORARY PAVEMENT CONSTRUCTION EXIT**  
NOT TO SCALE

TEMPORARY PAVEMENT CONSTRUCTION EXIT NOTES:

INSPECTION

1. INSPECT TEMPORARY PAVEMENT FOR DAMAGE.

MAINTENANCE

1. SWEEP DESIGNATED PAVED EXIT TO PREVENT SEDIMENT TRACK-OUT.
2. REPAIR DAMAGED TEMPORARY PAVEMENT.

STABILIZED CONSTRUCTION EXIT GENERAL NOTES:  
INSTALLATION

1. INSTALL STABILIZED CONSTRUCTION EXIT PRIOR TO EARTH WORK.
2. CLEAR THE EXIT AREA OF ALL VEGETATION, ROOTS, AND OTHER MATERIAL.
3. PROVIDE DRAINAGE TO CARRY WATER TO A SEDIMENT TRAP, VEGETATIVE SEDIMENT FILTER OR OTHER PROTECTED OUTLET.
4. EXCAVATE AND GRADE THE AREA FOR ROCK PLACEMENT.
5. INSTALL SIGNS, FENCING OR BARRICADES TO CHANNEL OUTGOING TRAFFIC TO THE STABILIZED CONSTRUCTION EXIT.

INSPECTION

1. INSPECT STABILIZED CONSTRUCTION EXIT FOR SEDIMENT ACCUMULATION AND MATERIAL DISPLACEMENT.
2. INSPECT ROADWAY FOR SEDIMENT TRACK-OUT.
3. INSPECT DITCHES TO ENSURE NO SEDIMENT ACCUMULATION.

MAINTENANCE

1. MAINTAIN EACH EXIT IN A CONDITION THAT WILL PREVENT TRACKING OF MUD OR SEDIMENT ONTO PUBLIC RIGHT-OF-WAY.
2. REPAIR AND/OR CLEAN OUT ANY STRUCTURES USED TO TRAP SEDIMENT.
3. REMOVE ALL MUD AND SEDIMENT DEPOSITED ON PAVED ROADWAYS.
4. ADD MORE SIGNS, FENCING OR BARRICADES WHEN VEHICLES ARE EXITING THE PROJECT WITHOUT USING THE STABILIZED CONSTRUCTION EXIT. INSTALL ADDITIONAL STABILIZED CONSTRUCTION EXITS IF NEEDED, YET USE SIGNS AND BARRICADES TO MINIMIZE THE NUMBER OF STABILIZED CONSTRUCTION EXITS.
5. PREVENT TRACK-OUT BY USING ADDITIONAL BMPs, SUCH AS A TIRE WASH.

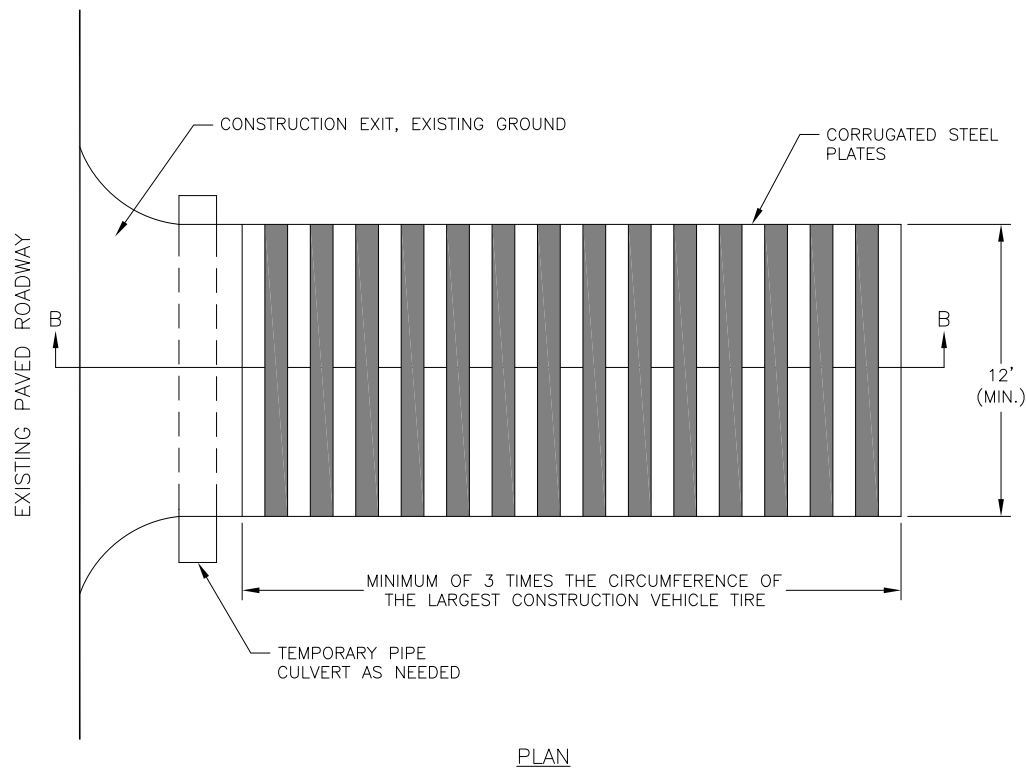
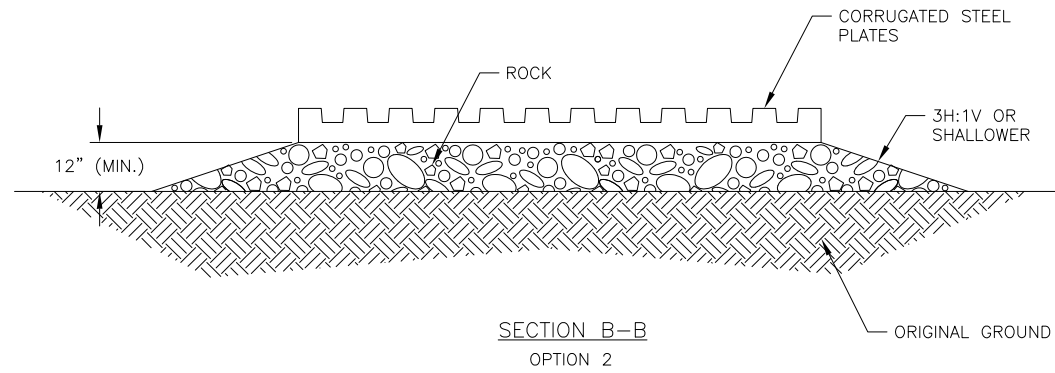
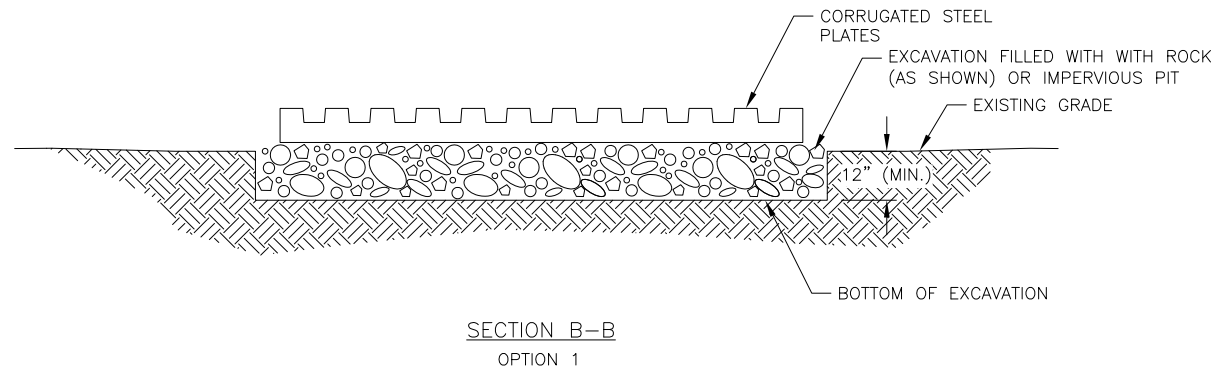
REMOVAL

1. REMOVE THE STABILIZED CONSTRUCTION EXIT AND ANY SEDIMENT TRAPPING STRUCTURES AFTER THEY ARE NO LONGER NEEDED, OR WITH FINAL SITE STABILIZATION.
2. REGRADE AND PERMANENTLY STABILIZE THE REMAINING DISTURBED AREAS ACCORDING TO THE PLANS.

REVISIONS		
Date	Description	By

State of Alaska DOT&PF  
**STABILIZED  
CONSTRUCTION EXIT  
(NOTES, ROCK &  
TEMPORARY PAVEMENT)**

APPROVED  
Date 12/2015 X/XX/XX



**METAL PLATE CONSTRUCTION EXIT**  
NOT TO SCALE

**METAL PLATE CONSTRUCTION EXIT NOTES:**

**MATERIALS**

CORRUGATED STEEL PLATES: SHAKER/RUMBLE PLATES, CORRUGATED STEEL PLATES, OR EQUIVALENT DESIGNED FOR ANTICIPATED TRAFFIC LOADS.

ROCK: 2- TO 3-INCH COARSE AGGREGATE.

**INSTALLATION**

1. IF CORRUGATED STEEL PLATES ARE OPEN TO THE SURFACE BELOW, INSTALL GRAVEL OR IMPERVIOUS PIT.
2. PLACE CORRUGATED STEEL PLATES.

**INSPECTION**

1. INSPECT CORRUGATED STEEL PLATES FOR DAMAGE.

**MAINTENANCE**

1. REPLACE DAMAGED CORRUGATED STEEL PLATES AS NECESSARY.
2. LIFT PLATE AND REMOVE ACCUMULATED SEDIMENT.
3. WHEN SURFACE VOIDS FILL WITH SEDIMENT, REPLACE ROCK MATERIAL.

**ADDITIONAL NOTES:**

SEE STABILIZED CONSTRUCTION EXIT GENERAL NOTES ON BMP 23.00 STABILIZED CONSTRUCTION EXIT (NOTES, ROCK & TEMPORARY PAVEMENT).

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Date	Description	By

State of Alaska DOT&PF  
**STABILIZED  
CONSTRUCTION EXIT  
(METAL PLATE)**

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## BMP 25.00 – 29.00. Storm Drain Inlet Sediment Protection – Curb and Area Inlets

These instructions cover BMP 25.00, 26.00, 27.00, 28.00 and 29.00.

### DESIGN CONSIDERATIONS

#### *Objectives*

Storm Drain Inlet Sediment Protection is used prior to permanent stabilization of the disturbed area to prevent sediment from entering downgradient storm drainage systems.

#### *Description*

Storm Drain Inlet Sediment Protection is a device or mechanism, either internal or external, for preventing sediment from entering a storm drain; generally by trapping sediment within or immediately adjacent to a storm drain inlet. Types of temporary protection devices applicable for different conditions are listed in the table. Prefabricated devices are available for internal and external applications.

#### *Other Names*

Storm Drain Inlet Protection, Filter Bag Insert, “Witch’s Hat,” Silt Sack

#### *Applicability*

Storm Drain Inlet Sediment Protection – Curb and Area Inlets are applicable when storm drain inlets must remain operational before permanent stabilization of the disturbed area and when there is potential for sediment to be transported into the storm drain system.

#### *Selection Considerations*

Internal devices generally consist of nonwoven, semi-porous material that traps larger sediment, but allows silt and clay-size particles to pass. They are most appropriate in situations where roadway flooding is a concern or where construction traffic will damage an external device.

External devices trap sediment by creating a ponding area surrounding or adjacent to the inlet, reducing velocities and allowing sediment to settle. This process allows external devices to be more efficient at trapping greater volumes of smaller sized sediment.

Curb inlets are distinguished from area inlets by their roadway edge location and proximity to traffic. Both are grated inlets, but whereas curb inlets are in-line with concrete curbing or curb and gutter features, area inlets are located in open areas and are generally surrounded by unpaved surfaces. These are also known as field inlets when they are permanent features, or they may be inlets in unpaved areas that will have paving around them as construction progresses.

Storm Drain Inlet Sediment Protection types applicable to curb inlets and area inlets are summarized in the following table:

**Storm Drain Inlet Sediment Protection Types and Applicability Table**

Storm Drain Inlet Sediment Protection Type	Applicability	
	Curb Inlet	Area Drain Inlet
External Sediment Protection		
Prefabricated Barrier System	Yes *	Yes
Gravel or Sand Bag Berm	Yes *	Yes
Fiber Roll	No	Yes
Filter Fabric (Silt Fence)	No	Yes
Inlet Grate Covers		
Filter Mat	No	Yes
Curb Face Mesh Filter	Yes	No
Internal Sediment Protection		
Filter Bag Insert	Yes	Yes
Sediment Control Inlet Hat	Yes	Yes
* If neither the sediment protection structure nor ponding will intrude into travel way		

- Fiber rolls and prefabricated barrier systems are not appropriate for locations where they cannot be properly anchored to the surface.
- Filter fabric (silt fence) as a sediment protection device is applicable to area inlets and for flows

less than 0.5 cubic feet per second (cfs) on flat grades (5 percent or less).

- Inlet grate filter mats are only applicable where heavy concentrated flows are not expected and are not applicable where ponding around the structure might cause excessive damage to adjacent structures and unprotected areas.
- Curb face inlet mesh filters for curb inlets prevent sediment from entering the inlet but they also require that runoff is bypassed. This sediment protection device should not be used at a sag inlet (an inlet at the lowest point on a vertical curve or in a depression); and, if used, conveyance to another point of discharge must be provided.

Any of these sediment protection devices may cause flooding affecting streets and the construction area. Where flooding would cause a hazard, consider where overflow will go in extreme events and provide emergency overflows with additional treatment.

#### *Design*

*Drainage Area:* Not to exceed 1 acre.

*Slope Gradient:* Not to exceed 5 percent.

Site and construct Storm Drain Inlet Sediment Protection in a manner that will facilitate cleanout and disposal of trapped sediment.

Design and construct the Storm Drain Inlet Sediment Protection in a manner that will allow flow to pass and to minimize ponding after the runoff has ceased.

#### *Relationship to Other Erosion and Sediment Control Measures*

Erosion and sediment control measures in the contributing areas must be in place to minimize the amount of sediment that must be treated at inlets. Storm Drain Inlet Sediment Protection is installed as a secondary measure to remove residual sediment that was not removed by other measures such as check dams, grassed swales, and sediment traps.

#### *Common Failures or Misuses*

- Sediment accumulation, by which filtering capacity is reduced, resulting in ponding of water.

- Improper installation, resulting in sediment bypassing filter and entering the inlet.
- Tearing, undermining, or collapsing of filter fabric, resulting in sediment entering the inlet.

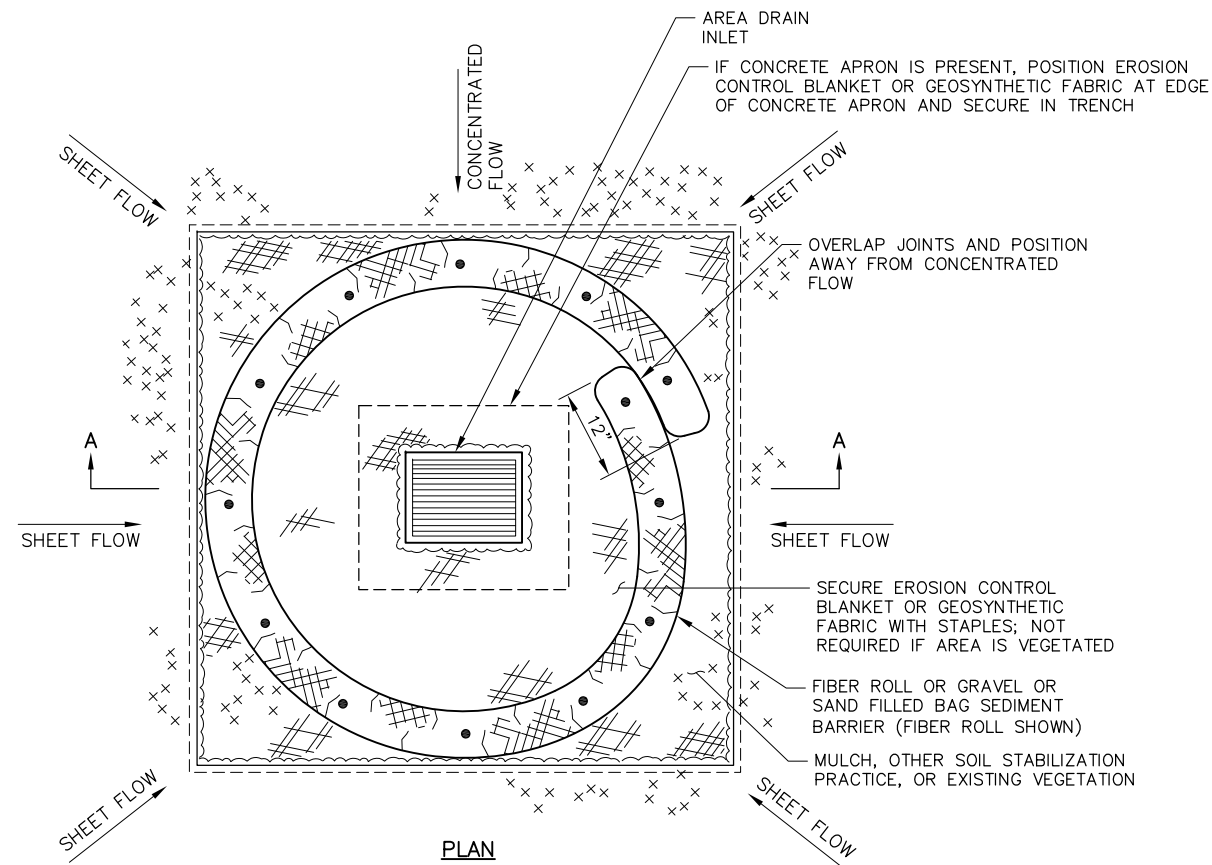
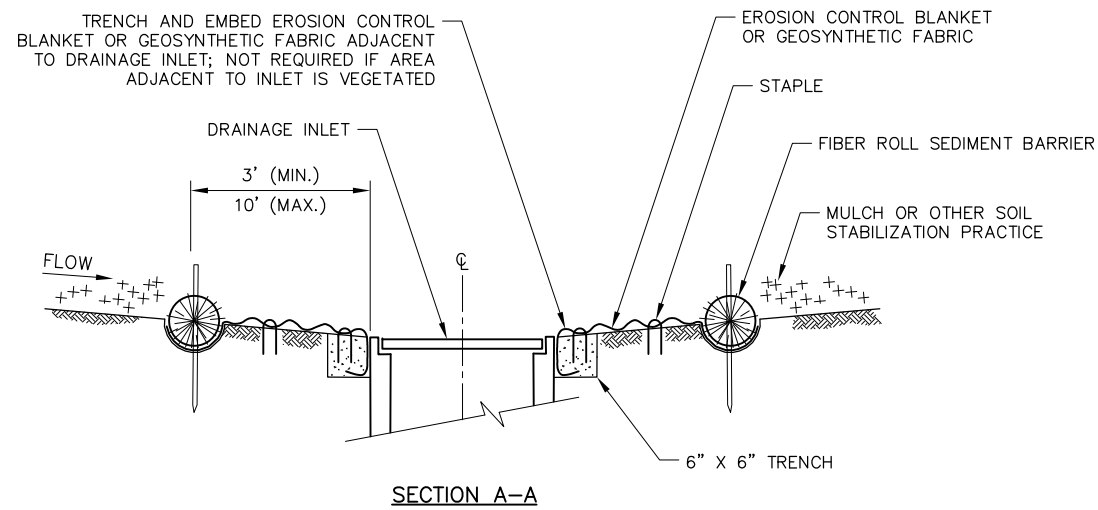
#### SPECIFICATIONS

##### Standard Specifications

- 683 – Storm Drain Inlet Sediment Protection
- 633 – Silt Fence
- 729-2.04 Geosynthetics

##### Drawings

- BMP-25.00 Storm Drain Inlet Sediment Protection (Sheets 1 of 5)
- BMP-26.00 Storm Drain Inlet Sediment Protection
- BMP-27.00 Storm Drain Inlet Sediment Protection
- BMP-28.00 Storm Drain Inlet Sediment Protection
- BMP-29.00 Storm Drain Inlet Sediment Protection
- BMP-13.00 Prefabricated Barrier System
- BMP-10.00 Fiber Rolls for Erosion and Sediment Control



**FIBER ROLL OR GRAVEL OR SAND BAG BERM  
FOR AREA INLETS**  
NOT TO SCALE

**FIBER ROLL OR GRAVEL OR SAND BAG BERM NOTES:  
MATERIALS**

**FIBER ROLL AND STAPLES:** SEE DRAWING BMP-10.00 FIBER ROLL FOR EROSION AND SEDIMENT CONTROL.

**GRAVEL- OR SAND-FILLED BAG:** TIGHTLY WOVEN BURLAP OR WOVEN GEOTEXTILE BAG MATERIAL THAT IS SUFFICIENTLY DURABLE TO REMAIN INTACT FOR THE TIME INTENDED. FILL BAGS 3/4 FULL OF GRAVEL OR SAND WITH A GRADATION SUCH THAT NO FINE SEDIMENT PASSES THROUGH THE BAG. IF THE SANDBAGS ARE NEEDED FOR MORE THAN ONE SUMMER SEASON, PROVIDE BAG MATERIAL THAT HAS ULTRAVIOLET STABILITY OF AT LEAST 70% IN CONFORMANCE WITH ASTM D4355 REQUIREMENTS. SECURELY CLOSE THE SAND BAGS.

**PREFABRICATED UNITS:** MAY BE USED IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING UPON APPROVAL BY THE ENGINEER.

**INSTALLATION**

1. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

2. FIBER ROLL - SEE DRAWING BMP-10.00 [FIBER ROLL]

**INSPECTION, MAINTENANCE, AND REMOVAL**

1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES, THIS SHEET.

**STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES:  
INSTALLATION**

1. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

**INSPECTION**

1. CHECK FOR SEDIMENT DEPTH. CLEANING IS REQUIRED WHEN SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE DESIGN DEPTH (OR LESS WHEN SPECIFIED BY THE MANUFACTURER OF PREFABRICATED BARRIERS).

2. CHECK FOR UNDERMINING OR BYPASSING, SUCH AS EVIDENCE THAT SEDIMENT IS ENTERING THE INLET OR THAT RUN-OFF IS BYPASSING THE BARRIER AND ENTERING THE INLET UNTREATED.

**MAINTENANCE**

1. IF PREFABRICATED BARRIERS ARE USED, MAINTAIN THEM AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

2. CORRECT UNDERMINING OR BYPASSING FAILURES.

3. REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES ONE-THIRD OF THE AVAILABLE STORAGE OF THE SEDIMENT PROTECTION DEVICE OR LESS WHEN SPECIFIED BY THE MANUFACTURER.

4. REMOVE AND DISPOSE OF ANY ROCK OR DEBRIS THAT HAS ACCUMULATED BEHIND THE SEDIMENT BARRIER TO PREVENT FURTHER CLOGGING.

5. REPLACE FRAYED OR TORN FABRIC OR MATERIALS AND REPAIR ANY STRUCTURAL DAMAGE AS SOON AS PRACTICABLE.

**REMOVAL**

1. LEAVE INLET SEDIMENT PROTECTION DEVICES IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA IS PERMANENTLY STABILIZED.

2. REMOVE AND DISPOSE OF TRAPPED OR REMAINING SEDIMENT.

3. STABILIZE DISTURBED SOIL AREAS RESULTING FROM REMOVAL OF BARRIERS OR SEDIMENT.

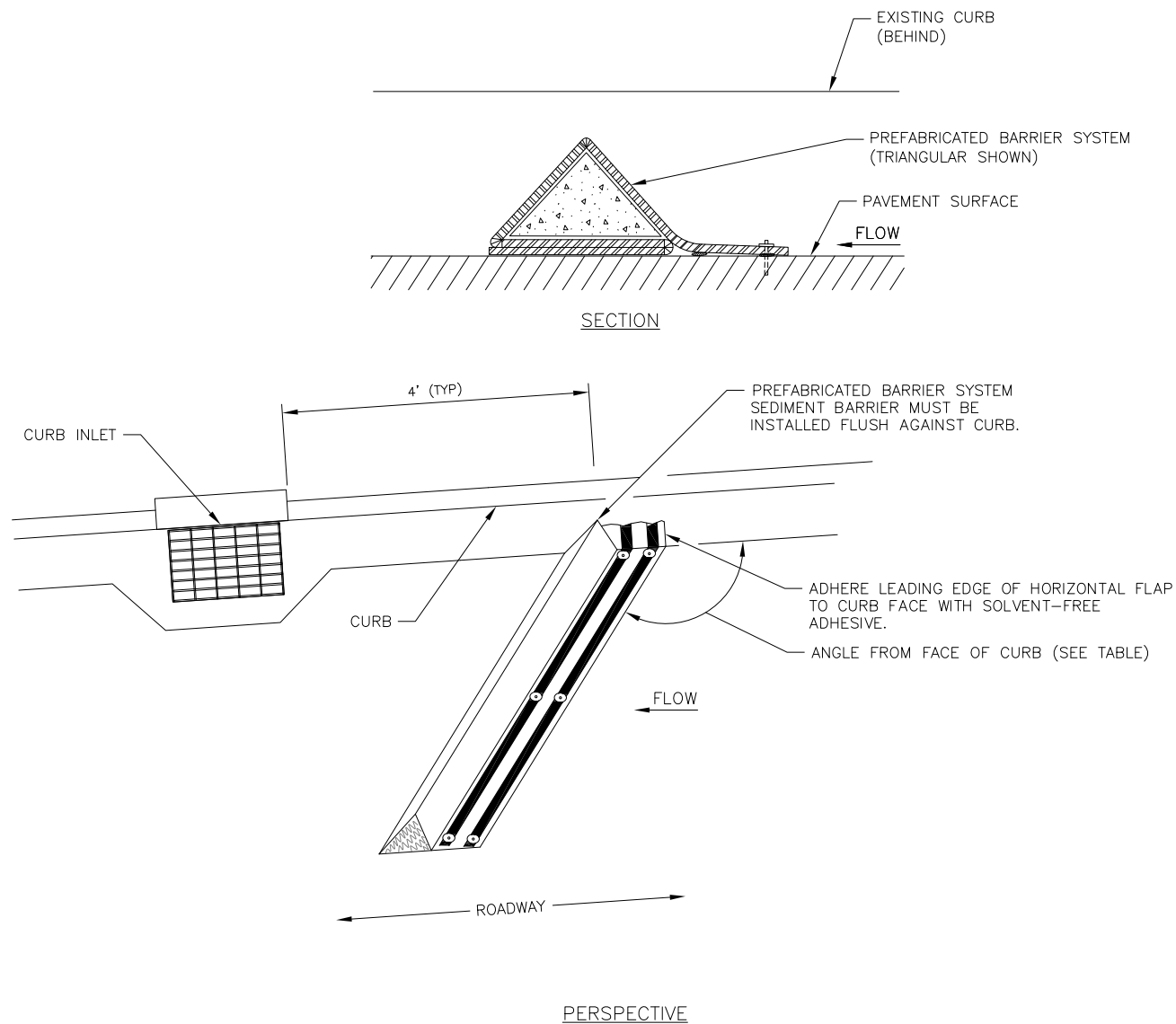
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State of Alaska DOT&PF  
**STORM DRAIN INLET  
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(NOTES & AREA INLET FIBER ROLL  
OR GRAVEL/SAND BAG BERM**

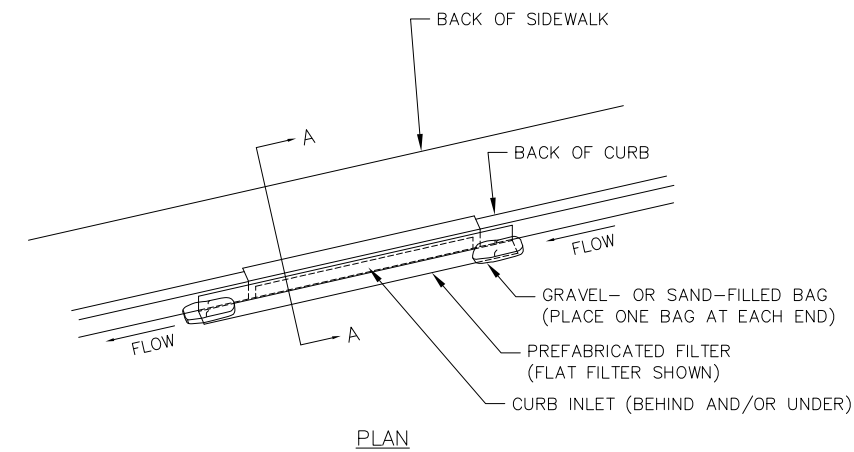
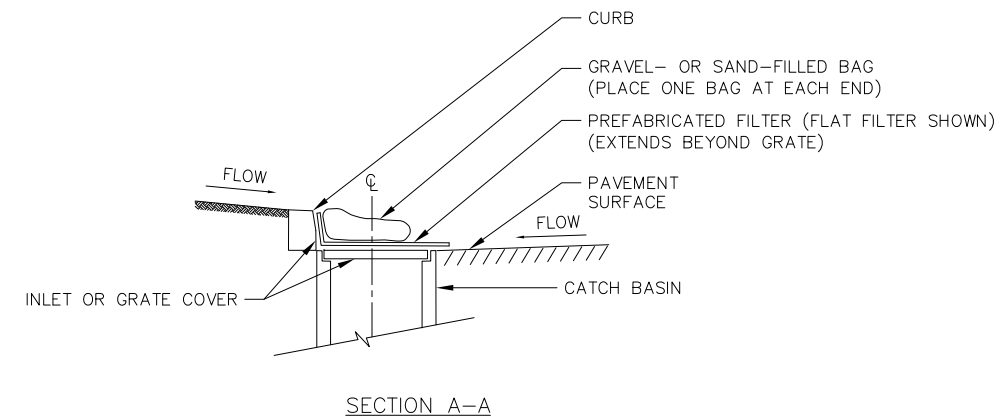
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**PREFABRICATED BARRIER SYSTEM  
FOR CURB INLETS**  
NOT TO SCALE



**CURB FACE INLET FILTER SYSTEM  
FOR CURB INLETS**  
NOT TO SCALE

**CURB INLET PREFABRICATED BARRIER NOTES:  
MATERIALS**

1. PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

**INSTALLATION**

1. PREFABRICATED BARRIERS: INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.
2. PREFABRICATED BARRIER SYSTEM - SEE DRAWING BMP-13.00 PREFABRICATED BARRIER SYSTEM

**INSPECTION, MAINTENANCE, AND REMOVAL**

1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES ON BMP-25.00 [STORM DRAIN INLET SEDIMENT PROTECTION (NOTES & AREA INLET FIBER ROLL OR GRAVEL/SAND BAG BERM)] NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.

SLOPE OF ROADWAY (PERCENT)	0 TO 2.9	3 TO 5+
ANGLE FROM FACE OF CURB	70°	45°
SUGGESTED BARRIER LENGTH	4'	
SUGGESTED DISTANCE FROM INLET	4'	

**CURB FACE INLET FILTER SYSTEM NOTES:  
MATERIALS**

**PREFABRICATED FILTER:** LINEAR, FLAT OR TUBE SHAPED CURB INLET FILTER

**GRAVEL- OR SAND-FILLED BAG:** TIGHTLY WOVEN BURLAP OR WOVEN GEOTEXTILE BAG MATERIAL THAT IS SUFFICIENTLY DURABLE TO REMAIN INTACT FOR THE TIME INTENDED. FILL BAGS 3/4 FULL OF GRAVEL OR SAND WITH A GRADATION SUCH THAT NO FINE SEDIMENT PASSES THROUGH THE BAG. IF THE SANDBAGS ARE NEEDED FOR MORE THAN ONE SUMMER SEASON, PROVIDE BAG MATERIAL THAT HAS ULTRAVIOLET STABILITY OF AT LEAST 70% IN CONFORMANCE WITH ASTM D4355 REQUIREMENTS. SECURELY CLOSE THE SAND BAGS.

**PREFABRICATED UNITS:** UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

**INSTALLATION**

1. INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

**INSPECTION, MAINTENANCE, AND REMOVAL**

1. SEE NOTES ON BMP-23.00 STORM DRAIN INLET SEDIMENT POTENTIAL BARRIERS, SHEET 1 - NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.

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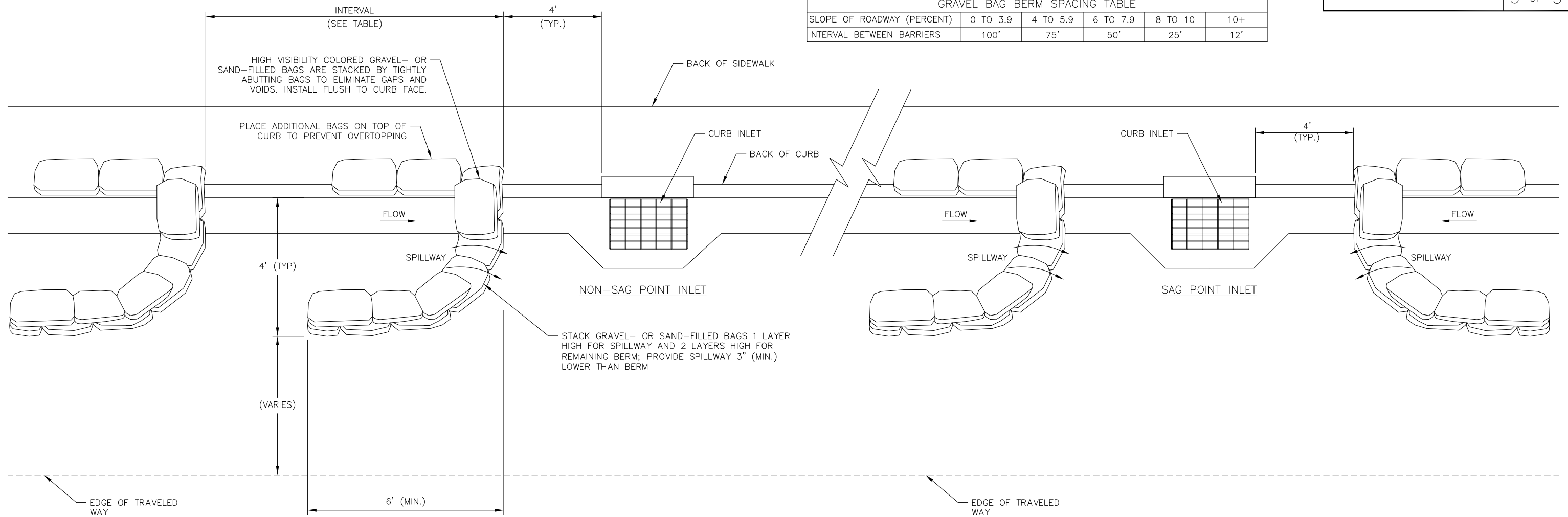
State of Alaska DOT&PF  
**STORM DRAIN INLET  
SEDIMENT PROTECTION  
(CURB INLET PREFABRICATED BARRIER  
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SLOPE OF ROADWAY (PERCENT)	0 TO 3.9	4 TO 5.9	6 TO 7.9	8 TO 10	10+
INTERVAL BETWEEN BARRIERS	100'	75'	50'	25'	12'



PERSPECTIVE

**GRAVEL OR SANDBAG BERMS FOR CURB INLETS**  
NOT TO SCALE

**CURB INLET GRAVEL OR SANDBAG BERM NOTES:**

**MATERIALS**  
**PREFABRICATED UNITS:** UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

**GRAVEL- OR SAND-FILLED BAG:** TIGHTLY WOVEN BURLAP OR WOVEN GEOTEXTILE BAG MATERIAL THAT IS SUFFICIENTLY DURABLE TO REMAIN INTACT FOR THE TIME INTENDED. FILL BAGS  $\frac{3}{4}$  FULL OF GRAVEL OR SAND WITH A GRADATION SUCH THAT NO FINE SEDIMENT PASSES THROUGH THE BAG. IF THE SANDBAGS ARE NEEDED FOR MORE THAN ONE SUMMER SEASON, PROVIDE BAG MATERIAL THAT HAS ULTRAVIOLET STABILITY OF AT LEAST 70% IN CONFORMANCE WITH ASTM D4355 REQUIREMENTS. SECURELY CLOSE THE SAND BAGS.

**INSTALLATION**

1. DELINEATE SAND BAGS WITH TRAFFIC CONTROL DEVICES WHERE NECESSARY
2. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

**INSPECTION, MAINTENANCE, AND REMOVAL**

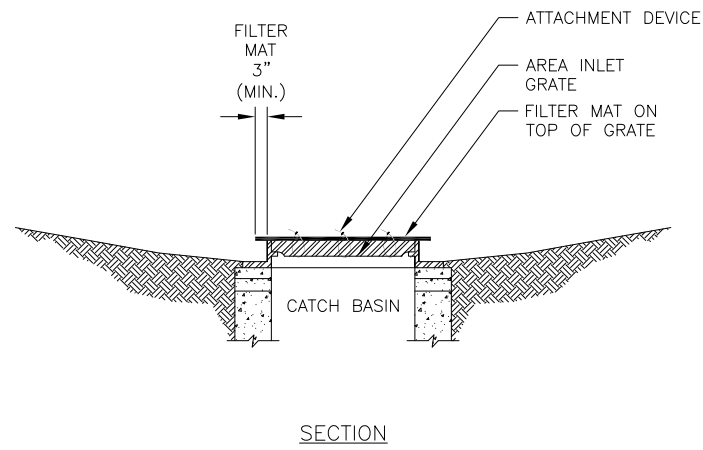
1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES ON BMP-25.00 [STORM DRAIN INLET SEDIMENT PROTECTION (NOTES & AREA INLET FIBER ROLL OR GRAVEL/SAND BAG BERM)] NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.

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Date	Description	By

State of Alaska DOT&PF  
**STORM DRAIN INLET  
 SEDIMENT PROTECTION  
 (CURB INLET GRAVEL  
 OR SANDBAG BERMS)**

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FILTER MAT FOR AREA INLETS  
NOT TO SCALE

AREA INLET FILTER MAT NOTES:

MATERIALS

MAT: FABRICATED FROM COIR OR EQUIVALENT MATERIAL FOR INLET PROTECTION

ATTACHMENT DEVICES: WIRE OR PLASTIC TIES

PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

INSTALLATION

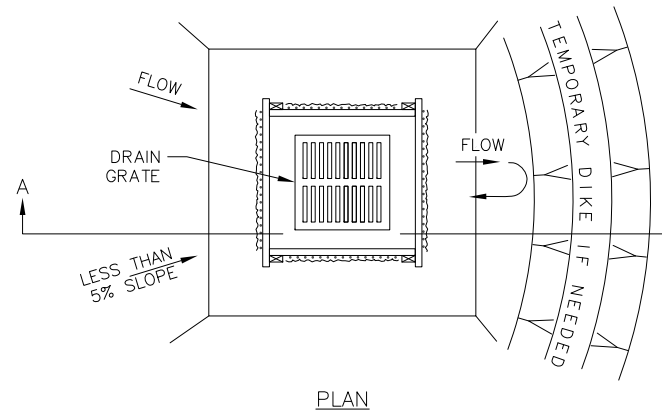
1. POSITION THE MAT OVER THE INLET GRATE AND ENSURE THAT IT EXTENDS BEYOND THE EDGE OF THE GRATE BY 3-INCHES MINIMUM ON ALL SIDES.
2. INSTALL AND ATTACH THE MAT TO THE GRATE AS SPECIFIED BY THE MANUFACTURER.
3. IF OTHER PREFABRICATED UNITS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

MAINTENANCE

1. SWEEP TOP AND SIDES OF THE MAT TO REMOVE SEDIMENT AND DEBRIS.
2. REMOVE AND REPLACE MAT IF IT BECOMES CLOGGED.

INSPECTION, MAINTENANCE, AND REMOVAL

1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES ON BMP-25.00 [STORM DRAIN INLET SEDIMENT PROTECTION (NOTES & AREA INLET FIBER ROLL OR GRAVEL/SAND BAG BERM)] NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.



FILTER FABRIC FOR AREA INLETS  
NOT TO SCALE

AREA INLET FILTER FABRIC NOTES:

MATERIALS

PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

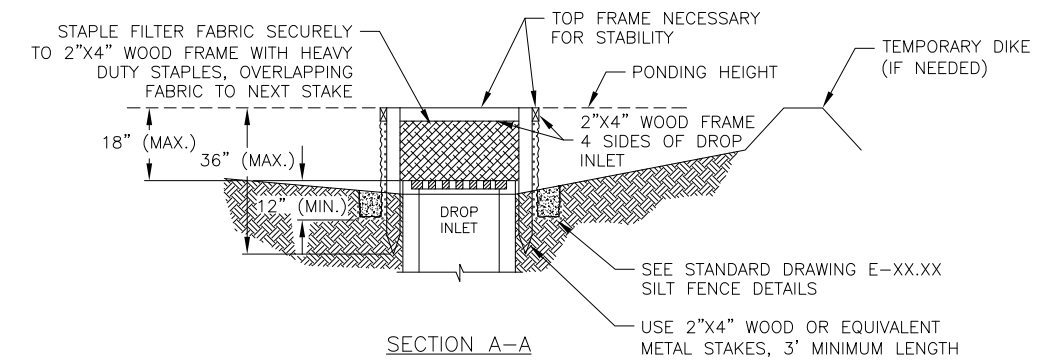
FILTER FABRIC: (SILT FENCE) SHALL COMPLY WITH SECTION 729-2.04 SILT FENCE.

INSTALLATION

1. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.
2. PLACE A STAKE AT EACH CORNER OF THE INLET OR IN A CIRCULAR PATTERN AROUND THE INLET NO MORE THAN 3 FEET APART. DRIVE STAKES INTO THE GROUND A MINIMUM OF 12 INCHES.
3. ENSURE STABILITY BY BRACING AT THE TOP.
4. INSTALL FILTER FABRIC (SILT FENCE) AS SHOWN ON DRAWING BMP-20.00 SILT FENCE.

INSPECTION, MAINTENANCE, AND REMOVAL

1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES ON BMP-25.00 [STORM DRAIN INLET SEDIMENT PROTECTION (NOTES & AREA INLET FIBER ROLL OR GRAVEL/SAND BAG BERM)] NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.



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State of Alaska DOT&PF  
**STORM DRAIN INLET  
SEDIMENT PROTECTION  
(AREA INLET FILTER MAT  
& FILTER FABRIC)**

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AREA DRAINS OR CURB INLET NOTES:

MATERIALS

PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

SEDIMENT CONTROL INLET HATS: SHALL BE A POLYETHYLENE HAT-LIKE STRUCTURE COVERING THE INLET WITH SMALL WEEP HOLES ON THE SIDE PROVIDING A FILTERING FUNCTION FOR THE STORMWATER RUNOFF, AND A LARGE OPENING ABOVE THE WEEP HOLES FOR EMERGENCY OVERFLOW.

FILTER BAG INSERTS: SHALL CONSIST OF A REPLACEABLE FILTER BAG REINFORCED WITH AN OUTER POLYESTER MESH FABRIC.

1. THE FILTER BAG SHALL BE SUSPENDED FROM A GALVANIZED STEEL RING, REBAR OR STEEL RODS, OR FRAME THAT FITS WITHIN A GRATE UTILIZING A STAINLESS STEEL BAND AND LOCKING CLAMP.
2. CONSTRUCT THE FILTER BAG THAT IS SUSPENDED FROM A FRAME OF A POLYPROPYLENE FILTER GEOTEXTILE FABRIC, THAT MEETS THE FOLLOWING MINIMUM REQUIREMENTS:

	ASTM METHOD	VALUE	UNITS
UNIT WEIGHT	--	4	OUNCE/SQ YD
FLOW RATE	--	145	GALLONS/MINUTE/SQ FT
PERMITTIVITY	D4491	0.5	PER SECOND
GRAB TENSILE STRENGTH	D4632	200	POUNDS
PUNCTURE STRENGTH	D6241	80	POUNDS
TEAR STRENGTH	D4533	50	POUNDS
DEBRIS CAPACITY	--	2	CUBIC FT

3. DOUBLE STITCH ALL EDGES AND SEAMS.
4. THE FILTER BAG INSERT SHALL HAVE OVAL, EDGE-HEAT-SEALED OVERFLOW HOLES, MINIMUM 2 INCHES X 4 INCHES, CUT INTO ALL FOUR PANEL SIDES.
5. PROVIDE BUILT-IN OVERFLOW BYPASS.
6. THE INLET STRUCTURE'S GRATE OVERFLOW CAPACITY IS AT A MINIMUM EQUAL TO THE DESIGN FLOW CAPACITY.
7. PROVIDE A RETRIEVAL SYSTEM, SUCH AS FLAPS, HANDLES, OR CORDS, TO ALLOW REMOVAL OF THE BELOW-INLET GRATE BARRIER WITHOUT SPILLING THE COLLECTED MATERIAL.

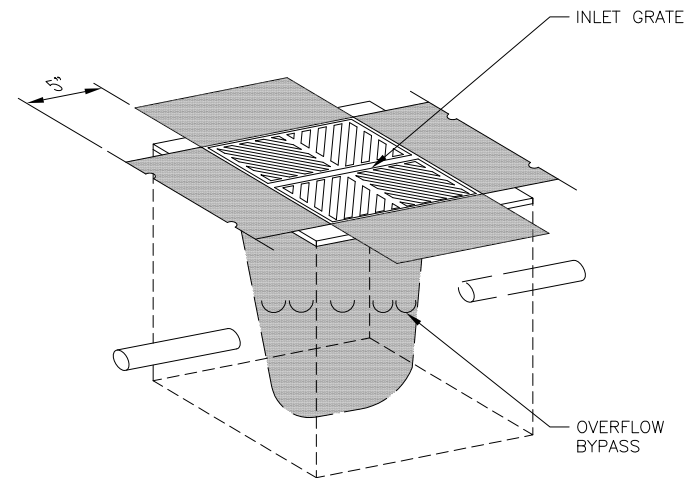
INSTALLATION

1. IF PREFABRICATED SEDIMENT PROTECTION DEVICES ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

INSPECTION, MAINTENANCE, AND REMOVAL

1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES ON BMP-25.00 [STORM DRAIN INLET SEDIMENT PROTECTION (NOTES & AREA INLET FIBER ROLL OR GRAVEL/SAND BAG BERM)] NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.

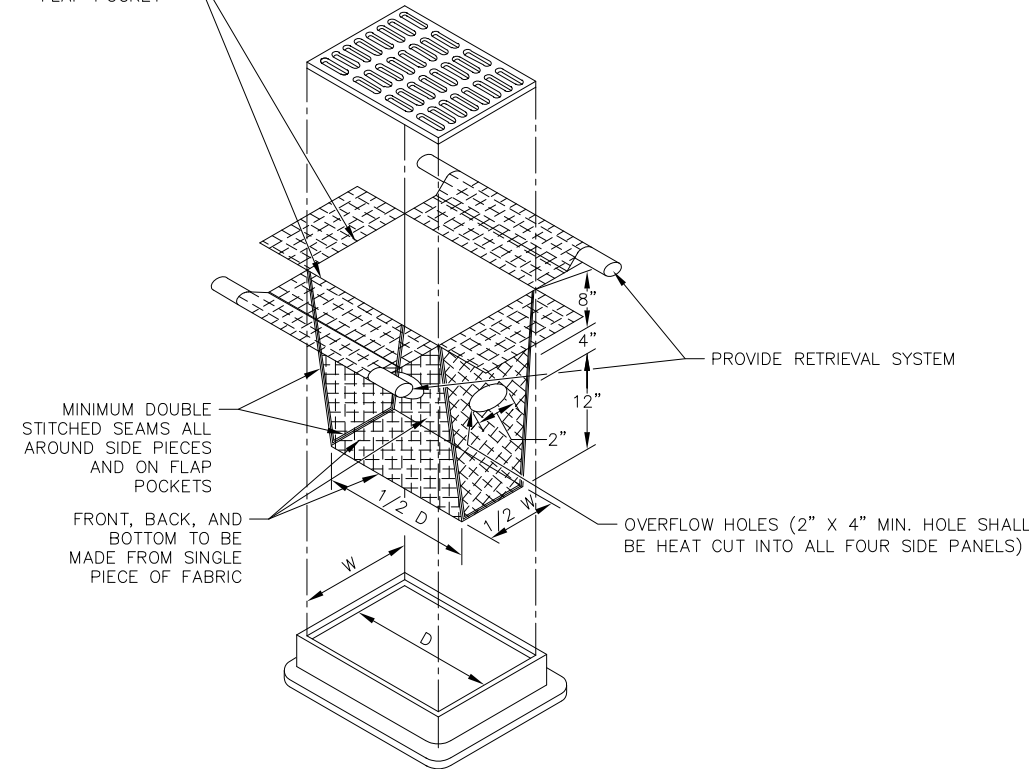
INLET SPECIFICATIONS AS PER THE PLAN DIMENSION LENGTH AND WIDTH TO MATCH FLAP POCKET



PERSPECTIVE

SEDIMENT CONTROL INLET HAT  
FOR AREA DRAINS OR CURB INLETS

NOT TO SCALE



PERSPECTIVE

FILTER BAG INSERT  
FOR AREA DRAINS OR CURB INLETS

NOT TO SCALE

REVISIONS		
Date	Description	By

State of Alaska DOT&PF  
STORM DRAIN INLET  
SEDIMENT PROTECTION  
(AREA OR CURB INLET  
FILTER INSERT)

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## BMP 30.00. Surface Roughening

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### DESIGN CONSIDERATIONS

#### *Objectives*

Surface roughening measures are intended to aid in the establishment of vegetative cover from seed, to reduce runoff velocity and increase infiltration, and to reduce erosion.

A rough, loose soil surface provides more favorable moisture conditions for seed germination than hard, smooth surfaces. It provides interstitial space for seed deposition and germination and root growth.

#### *Description*

Surface roughening establishes a rough soil surface by creating horizontal grooves, furrows, or depressions running parallel to the slope contour over the entire face of the slope. The most common measures include:

- **Stair-Step Grading** - This is done by cutting “steps” along the contour of a slope, and is applicable to slopes with a gradient greater than 3:1, which have material soft enough to be bulldozed.
- **Tracking** - This is done by running tracked machinery (such as bulldozers) up and down slopes to leave horizontal depressions in the soil.
- **Mechanical methods** – This is done by drawing or rolling equipment such as punch or sheepfoot rollers over the surface.
- **Manual Raking** - This is done manually by using hand tools such as rakes or hoes to create grooves at least 1-inch deep and no more than 12 inches apart.

#### *Other Names*

Contour grading, serration, cat tracking, track walking

#### *Applicability*

Surface roughening measures provide simple, inexpensive, and immediate short-term erosion control for bare soil where vegetative cover is not yet established on construction slopes greater than 5 vertical feet. By themselves, they are not soil

stabilization and must be seeded, fertilized, and mulched as soon as possible.

#### *Selection Considerations*

Selection of slope roughening measures should be based on slope grade, slope type (cut or fill), type of equipment available, and soil type.

1. Cut slopes steeper than 3:1. Use stair-step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-step grading.
2. Fill slopes steeper than 2:1. Use tracking to roughen the face of the slope. If soil is loose, such as sandy soil, manual raking is more suitable.
3. Fill slopes between 2:1 and 3:1. Use tracking or mechanical methods to roughen the face of the slope, if necessary.
4. Cuts, fills, and graded areas no steeper than 3:1. Roughen these areas by tracking, mechanical methods, manual raking, or by using tilling, disking, or harrowing implements.

Surface roughening is suitable for all erodible soils. Stable, sloping rocky faces may not require roughening, while erodible slopes steeper than 3:1 require special attention to surface roughening.

#### *Relationship to Other ESC Measures*

Diversions at the upper perimeter of the area function to prevent runoff from causing erosion on the exposed soil. Hydromulch/seed on slopes for erosion control. Silt fences and sediment basins at the lower perimeter of the area function to prevent off-site sedimentation.

#### *Common Failures or Misuses*

- Roughening washed away by heavy rain, necessitating re-roughening and reseeded.
- Failure of upslope control measures (diversions), resulting in excessive flows over area and erosion of soil.
- Surface roughening alone is not considered stabilization.



- Surface roughening must not be used as a means to keep an area “actively worked” to reset the stabilization deadline.
- Track walking in the wrong direction is a common failure that provides valleys for the water to concentrate in.

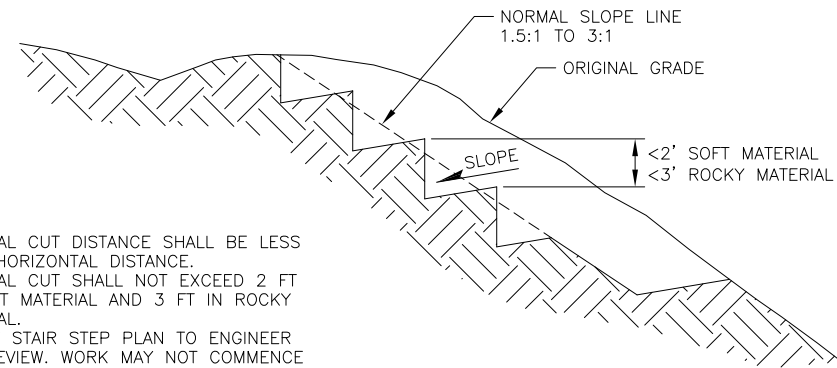
### SPECIFICATIONS

#### Standard Specification

- 684 – Surface Roughening

#### Drawing

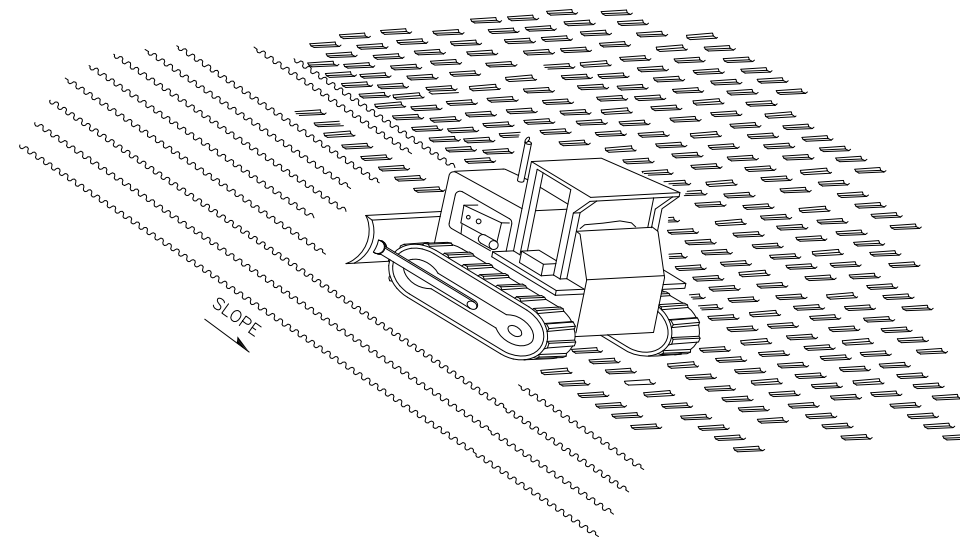
- BMP-30.00 – Surface Roughening



**NOTES:**

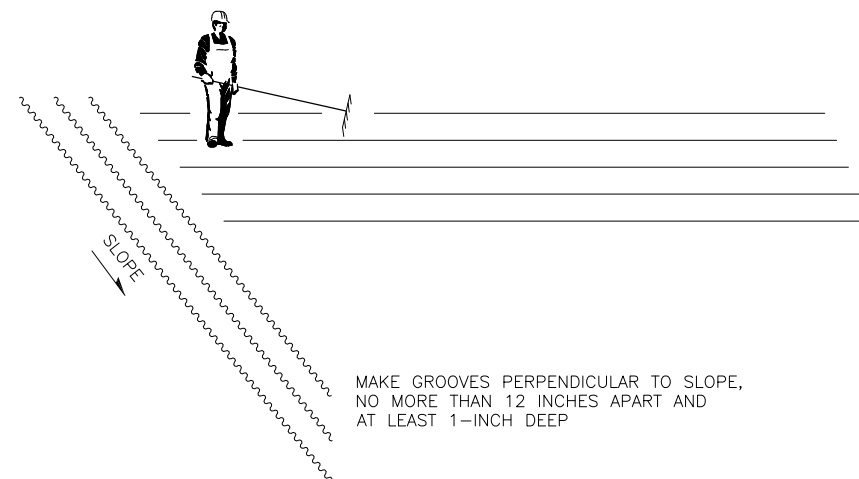
1. VERTICAL CUT DISTANCE SHALL BE LESS THAN HORIZONTAL DISTANCE.
2. VERTICAL CUT SHALL NOT EXCEED 2 FT IN SOFT MATERIAL AND 3 FT IN ROCKY MATERIAL.
3. SUBMIT STAIR STEP PLAN TO ENGINEER FOR REVIEW. WORK MAY NOT COMMENCE UNTIL AFTER APPROVAL.

DETAIL 1: STAIR STEP GRADING



TRACK WITH MACHINERY UP AND DOWN THE SLOPE TO PROVIDE GROOVES TO CATCH SEED AND RAINFALL AND TO REDUCE RUNOFF.

DETAIL 2: TRACKING



MAKE GROOVES PERPENDICULAR TO SLOPE, NO MORE THAN 12 INCHES APART AND AT LEAST 1-INCH DEEP

DETAIL 3: MANUAL RAKING

**EQUIPMENT**

TRACKED EQUIPMENT (SUCH AS BULLDOZERS), SHEEPSFOOT OR PUNCH ROLLERS, RAKES, HOES, HARROWING TOOLS OR OTHER EQUIPMENT AS APPROVED BY THE ENGINEER.

**INSTALLATION**

1. GROOVE THE SLOPE TO CREATE A SERIES OF RIDGES AND DEPRESSIONS THAT RUN ACROSS THE SLOPE, ALONG THE CONTOUR OF THE GROUND.
2. ON FILL SLOPES STEEPER THAN 3:1, ENSURE THAT THE FACE OF THE SLOPE CONSISTS OF LOOSE, UNCOMPACTED FILL 4 INCHES TO 8 INCHES DEEP.
3. DO NOT BLADE OR SCRAPE THE FINAL SLOPE FACE. DO NOT BACK BLADE DURING THE FINAL GRADING OPERATION.
4. WHEN ROUGHENING WITH TRACKED MACHINERY (DETAILS 1 OR 2), LIMIT THE NUMBER OF PASSES TO AVOID UNDUE COMPACTION OF THE SOIL.
5. AVOID EXCESSIVE ROUGHNESS THAT WOULD HINDER UNIFORM PLANT ESTABLISHMENT, SUCH AS A LARGE PERCENTAGE OF THE AREA WITH FURROWS DEEPER OR CLODS LARGER THAN 4 INCHES.

SEED, FERTILIZE, AND MULCH AREAS THAT ARE ROUGHENED AS SOON AS PRACTICABLE.

**INSPECTION**

ENSURE THE AREA HAS AN ADEQUATE DEPTH AND COVERAGE OF ROUGHENING. INSPECT THE AREAS ACCORDING TO ESTABLISHED SCHEDULES AS REQUIRED BY THE CGP AND THE SWPPP.

**MAINTENANCE**

REGRADE AND RESEED AS SOON AS PRACTICABLE IF RILLS OR CHANNELIZATION OF RUNOFF APPEAR.

REVISIONS		
Date	Description	By

State of Alaska  
Department of Transportation  
& Public Facilities  
**SURFACE ROUGHENING**

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NOT TO SCALE

Date 12/2015 X/XX/XX

## **BMP 31.00 – 33.00. Temporary Check Dam**

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These instructions include BMP 31.00, 32.00, and 33.00.

### DESIGN CONSIDERATIONS

#### *Objectives*

Temporary Check Dams are used to reduce scour, reduce velocity, dissipate energy, prevent erosion, and settle sediment behind the weir structure in an unlined channel or vegetative swale.

#### *Description*

A Temporary Check Dam can be constructed of a variety of materials and is placed perpendicular to flow in a ditch or channel. It is placed so that it extends higher than the water level on both sides of the flow path and is lower in the center to allow water to flow through a controlled path.

Temporary Check Dams can be constructed from angular rock, fiber rolls, prefabricated foam barriers, sandbags, or compost socks. When rock is used, small sediment particles become lodged in the check dam's interior.

#### *Other Names*

In-Stream/Channel Energy Dissipater, Velocity Control Device, Sediment Trap, Ditch Check

#### *Applicability*

Temporary Check Dams are placed in series in ditches, swales, or other minor drainageways that require velocity checks, are not yet vegetated, or are intended to be filled or stabilized at a later time. When placed in a lined channel, check dams dissipate velocity, settle sediment, and anchor the liner.

Check dams may also be used as permanent measures for gradient control structures in ditches adjacent to elevated roadway sections.

#### *Selection Considerations*

Dependent on materials available, best management practices (BMPs) being used on the project and the durability required, Temporary Check Dams can be constructed from rock, fiber rolls, prefabricated barrier systems, sandbags, or compost socks. The Standard Drawing for Temporary Check Dams has details for the installation of each type of check dam.

- Check dams are used in narrow ditches.
- Steep channel slopes reduce effectiveness.
- Coupling check dams with a small adjacent upstream sump improves velocity slowing and sediment trapping ability.
- The area downstream from the last dam should be stabilized or flow diverted.
- Check dam rocks interfere with the establishment of vegetation.
- Some Temporary Check Dams are left as a permanent control measure. Removal may be indicated because of unsightliness or interference with maintenance (grass mowing) activities.

#### *Design*

The design of Temporary Check Dams (high at channel banks, lower in the middle) directs overtopping flows centrally to avert scouring of channel surfaces. The check dam is keyed into channel slopes to prevent bank undercut and erosion.

Check dam structures are sized to stay in place during peak flow. The check dam height or weir depth should pass 2-year, 24-hour storm runoff without overtopping the roadway or ditch sideslopes. Generally, check dams are not constructed higher than recommended since excessive weir depth seriously impacts the flow characteristics of the ditch.

- Design flow: 2-year, 24-hour
- Spacing:
  - Align the base of the upstream check dam with the top of the next downstream check dam.
  - Space check dams evenly in the drainageway, adjust spacing for grade breaks.
  - Use the spacing chart below to determine the distance between check dams based on slope and check dam height.

Maximum Spacing for Temporary Check Dams (Feet)

Ditch Grade	Minimum Weir Depth	
	12 inches	18 inches
6%	15	25
5%	20	30
4%	25	40
3%	30	50
2%	50	80

This table is used to estimate the number of check dams. Actual spacing should be based on field conditions and meet the requirement that the top elevation is equal to the bottom elevation of the next upstream check dam. Spacing is also a function of the ditch erodibility, the flow, and the velocity.

*Relationship to Other Erosion and Sediment Control Measures*

Temporary Check Dams are used for channel protection prior to establishment of permanent or stabilized erosion controls. Although check dams perform some sediment filtering, they are not intended to replace filters or sediment basins. A depression in the bottom of the channel at the upstream edge of a check dam augments velocity slowing and sediment removal; however, digging a sump through stabilized in-channel protection (e.g. grassed lining) should be avoided.

Protective channel linings (e.g. grassed waterway, concrete or rock-lined ditch, erosion control blankets, or matings), sediment settling ponds, permanent ditch blocks, brush barriers, diversions, slope drains, or combinations of these measures can be used in conjunction with or as an alternative to Temporary Check Dams.

*Common Failures or Misuses*

- Improper spacing of check dams.
- Undercut/washout of channel banks beside the structure due to improper installation (e.g. dam not built high enough onto the banks).
- Increased bank erosion (e.g. at channel bends) or inadequate protection of channel surfaces due to improper location or installation of check dams.

- Water backup and bank overflow due to overly tall dam structure.
- Use of check dams for soil stabilization.
- Placement of check dams at abrupt bends causing erosive waters to be misdirected by the check dam into channel banks.
- Check dams installed in grass-lined structures may kill the vegetative lining if siltation is excessive or the check dam remains submerged for extended periods of time.
- Placement in waters of the U.S. or wetlands without appropriate agency permitting.
- Placement of check dams below the expected backwater from a salmonid bearing water causing a loss of high flow refuge habitat for overwintering juvenile salmonids and emergent fry.
- Improperly anchored check dams causing the check dam to wash away.
- When rock is used, inadequate rock size or angularity.
- When rock is used, rocks washed downstream causing culvert clogs, misdirecting flow, etc.
- Use of silt fence or straw bales as check dams.

SPECIFICATIONS

Standard Specification

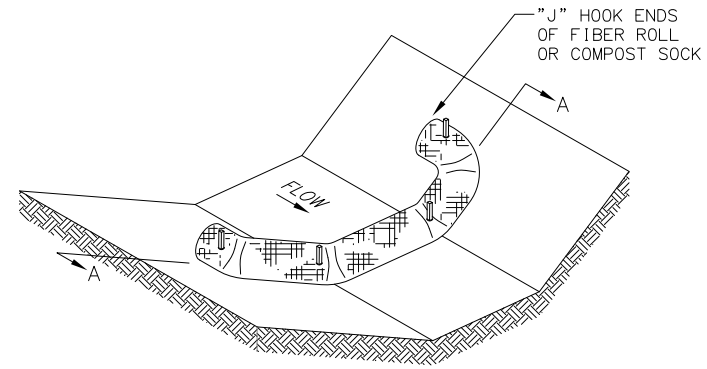
- 685- Temporary Check Dam

Drawings

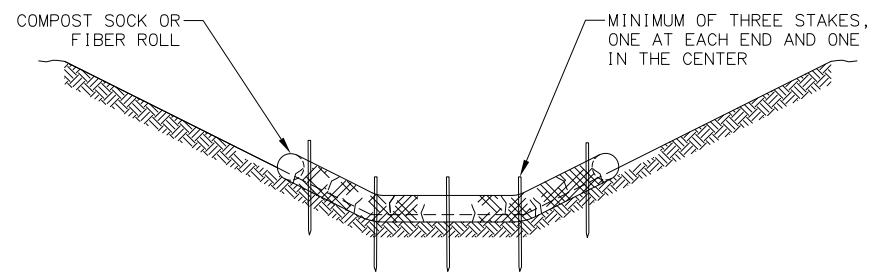
- BMP-31.00 Temporary Check Dam (Notes & Fiber Roll or Compost Sock)
- BMP-32.00 Temporary Check Dam (Prefabricated Barrier System & Rock)
- BMP-33.00 Temporary Check Dam (Sandbag)

Reference Drawings

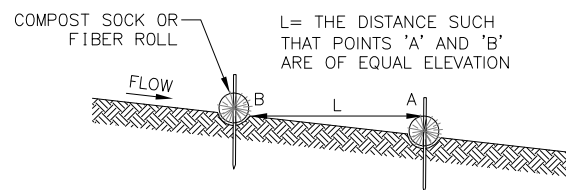
- BMP-04.00 Compost Berm
- BMP-05.00 Compost Sock
- BMP-10.00 Fiber Rolls for Erosion and Sediment Control
- BMP-13.00 Prefabricated Barrier System



PERSPECTIVE



SECTION A-A



PROFILE

FIBER ROLL OR COMPOST SOCK  
NOT TO SCALE

- FIBER ROLL OR COMPOST SOCK NOTES:
- FOR USE OF FIBER ROLLS SEE BMP-10.00 FIBER ROLLS FOR EROSION AND SEDIMENT CONTROL.
  - FOR USE OF COMPOST SOCKS SEE BMP-05.00 COMPOST BERM & SOCK.
- INSTALLATION, INSPECTION, MAINTENANCE, AND REMOVAL
- SEE TEMPORARY CHECK DAM NOTES, THIS SHEET.

TEMPORARY CHECK DAM GENERAL NOTES:

MATERIALS

TEMPORARY CHECK DAM: USE ONLY CLEAN MATERIALS.

INSTALLATION

- INSTALL CHECK DAMS AS SOON AS DRAINAGE ROUTES ARE ESTABLISHED.
- PLACE CHECK DAMS PERPENDICULAR TO THE FLOW OF WATER.
- IF NECESSARY, IMPOUND OR BYPASS UPSTREAM WATER FLOW PRIOR TO INSTALLING CHECK DAMS.
- EXTEND CHECK DAMS ONTO THE CHANNEL BANKS TO A HEIGHT ABOVE ANTICIPATED HIGH WATER LEVEL TO PREVENT LOCALIZED UNDERMINING AND EROSION.

INSPECTION

- VISUALLY COMPARE UPSTREAM AND DOWNSTREAM FLOWS TO DETERMINE RELATIVE TURBIDITY LEVELS AND EFFECTIVENESS OF CHECK DAMS.
- INSPECT CHANNEL BANKS FOR EVIDENCE OF UNDERMINING AND EROSION.
- INSPECT FOR DAM DETERIORATION AND FOR MIGRATION OF STRUCTURAL COMPONENTS DOWNSTREAM.
- ENSURE THE CENTER OF THE DAM IS LOWER THAN THE EDGES AND THAT WATER IS NOT RUNNING AROUND THE ENDS.

MAINTENANCE

- REPAIR BANK UNDERCUTS.
- REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES HALF THE HEIGHT OF THE DAM OR ONE-THIRD OF THE AVAILABLE STORAGE IF PROTECTING A WATER BODY OR STORM DRAIN INLET.
- REPAIR UNDERCUTTING AND FLOW AROUND THE EDGES OR, IF NECESSARY, REPOSITION THE CHECK DAM.
- INSTALL ADDITIONAL DAMS OR OTHER EROSION AND SEDIMENT CONTROL MEASURES AS NEEDED.

REMOVAL

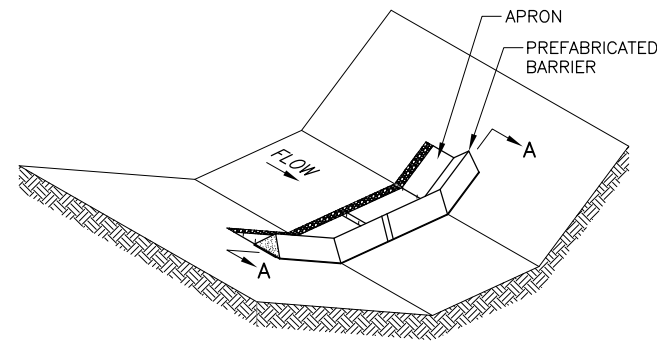
- AFTER THE DISTURBED AREA IS PERMANENTLY STABILIZED OR WHEN THE GRASS IN THE CHANNEL HAS MATURED SUFFICIENTLY TO PROTECT THE DITCH OR SWALE, REMOVE TEMPORARY CHECK DAMS.
- TAKE CARE DURING CHECK DAM REMOVAL, SINCE THE WATERWAY SURFACE IS SUSCEPTIBLE TO DAMAGE.
- IMMEDIATELY SEED OR PROVIDE OTHER FORMS OF PROTECTION FOR DAMAGED OR UNPROTECTED AREAS.

REVISIONS		
Date	Description	By

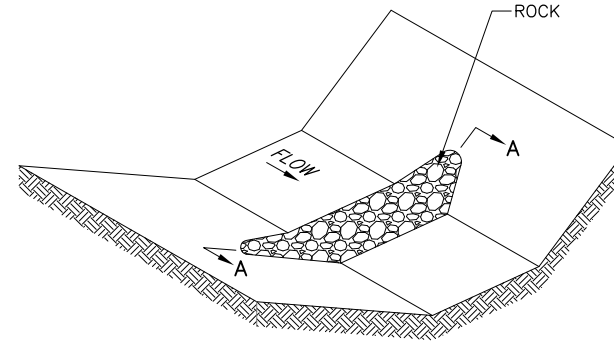
State of Alaska DOT&PF  
**TEMPORARY CHECK DAM**  
 (NOTES & FIBER ROLL OR  
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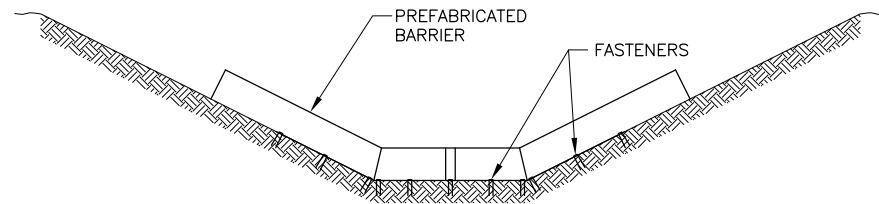
Date 12/2015 X/XX/XX



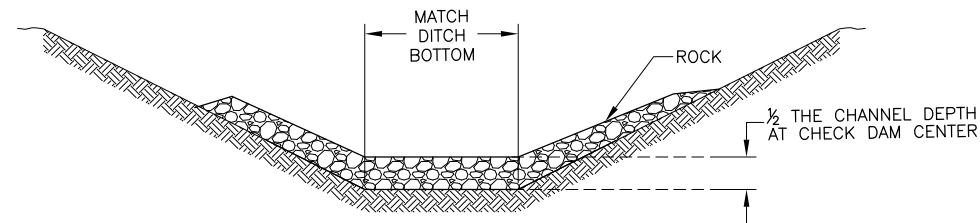
PERSPECTIVE



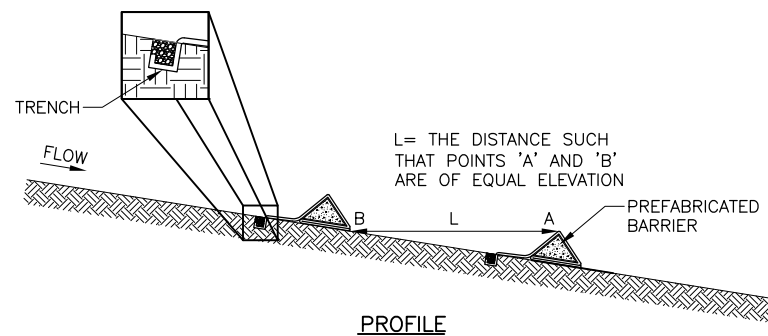
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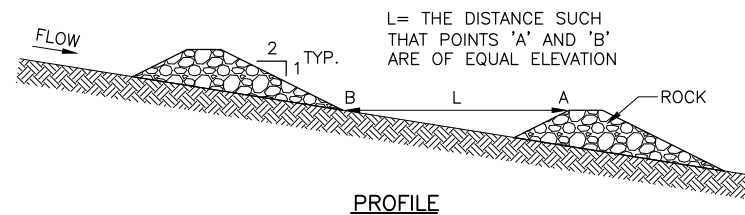
SECTION A-A



SECTION A-A



PROFILE



PROFILE

**PREFABRICATED BARRIER SYSTEM CHECK DAM**  
NOT TO SCALE

**PREFABRICATED BARRIER SYSTEM NOTES:**

1. FOR USE OF PREFABRICATED BARRIER, SEE BMP-13.00 PREFABRICATED BARRIER SYSTEM

**INSTALLATION, INSPECTION, MAINTENANCE, AND REMOVAL**

1. SEE TEMPORARY CHECK DAM GENERAL NOTES ON BMP-31.00 (TEMPORARY CHECK DAM SHEET 1) - NOTES FOR INSTALLATION, INSPECTION, MAINTENANCE, AND REMOVAL.

**ROCK CHECK DAM**  
NOT TO SCALE

**ROCK NOTES:**  
**MATERIALS**

BERM: CLEAN HARD ANGULAR (E.G. CRUSHED, SHOT) ROCK GRADED ACCORDING TO EXPECTED FLOWS; 3- TO 6-INCH DIAMETER ROCK IS USUALLY ADEQUATE.

**INSTALLATION**

1. PLACE ROCK BY HAND OR MECHANICAL MEANS, DISTRIBUTING SMALLER ROCKS TO THE UPSTREAM SIDE TO PREVENT TRANSPORT.

**MAINTENANCE**

1. REPAIR VOIDS.
2. FORTIFY DISINTEGRATING DAMS. CONSIDER WHETHER ROCK SIZE IS SUFFICIENT FOR FLOWS.
3. CORRECT EFFECTS OF ROCK MIGRATION (E.G. CLOGGED CULVERT, FLOW CONSTRICTION) OR ANY DOWNSTREAM EROSION. IDENTIFY THE ORIGIN OF THE PROBLEM AND REPAIR, REPLACE OR ADD BMPS TO CORRECT IT.

**ADDITIONAL NOTES**

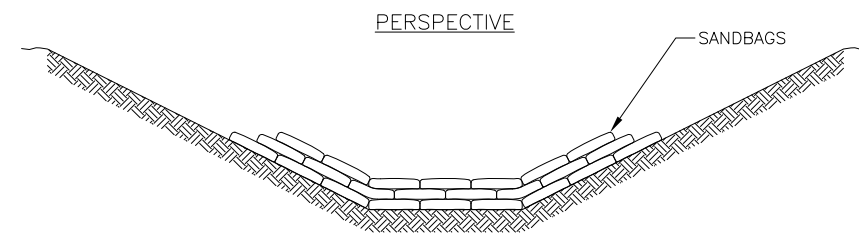
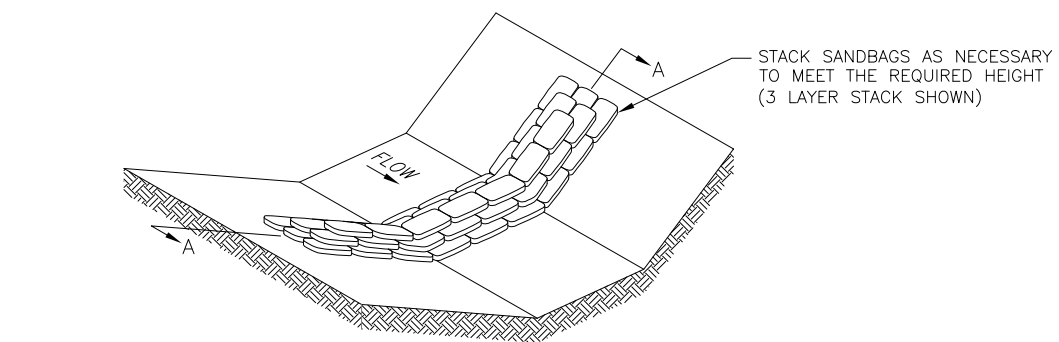
1. SEE TEMPORARY CHECK DAM GENERAL NOTES ON BMP-31.00 (TEMPORARY CHECK DAM SHEET 1) - NOTES FOR INSTALLATION, INSPECTION, MAINTENANCE, AND REMOVAL.

REVISIONS		
Date	Description	By

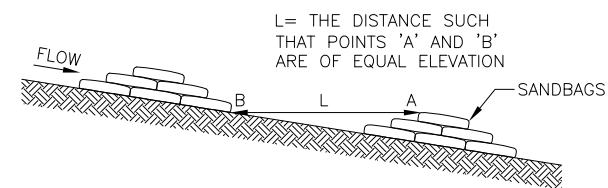
State of Alaska DOT&PF  
**TEMPORARY CHECK DAM  
(PREFABRICATED BARRIER  
SYSTEM & ROCK)**

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Date 12/2015 X/XX/XX



SECTION A-A



PROFILE

SANDBAG CHECK DAM  
NOT TO SCALE

**SANDBAG NOTES:**

**MATERIALS**

**SANDBAG BARRIER:** TIGHTLY WOVEN BURLAP OR WOVEN GEOTEXTILE BAG MATERIAL THAT IS SUFFICIENTLY DURABLE TO REMAIN INTACT FOR THE TIME INTENDED. FILL BAGS  $\frac{3}{4}$  FULL OF GRAVEL OR SAND WITH A GRADATION SUCH THAT NO FINE SEDIMENT PASSES THROUGH THE BAG. IF THE SANDBAGS ARE NEEDED FOR MORE THAN ONE SUMMER SEASON, PROVIDE BAG MATERIAL THAT HAS ULTRAVIOLET STABILITY OF AT LEAST 70% IN CONFORMANCE WITH ASTM D4355 REQUIREMENTS. SECURELY CLOSE THE SAND BAGS.

**INSTALLATION**

1. PLACE SANDBAGS SO THAT THE INITIAL ROW MAKES TIGHT CONTACT WITH THE DITCH LINE FOR THE LENGTH OF THE DAM.
2. TIGHTLY ABUT ALL SANDBAGS.
3. STAGGER SANDBAG LIFTS SO THAT THE CENTER OF THE BAG IS PLACED ON THE SPACE BETWEEN BAGS ON THE PREVIOUS LIFT.

**INSPECTION**

1. ENSURE THE SANDBAGS ARE IN TIGHT CONTACT WITH THE SOIL.
2. LOOK FOR SPLIT, TORN, OR UNRAVELING BAGS.

**MAINTENANCE**

1. REPLACE DAMAGED SANDBAGS AS NECESSARY.

**ADDITIONAL NOTES**

1. SEE TEMPORARY CHECK DAM GENERAL NOTES ON BMP-31.00 (TEMPORARY CHECK DAM SHEET 1) - NOTES FOR INSTALLATION, INSPECTION, MAINTENANCE, AND REMOVAL.

REVISIONS		
Date	Description	By

State of Alaska DOT&PF  
**TEMPORARY CHECK DAM  
(SANDBAG)**

Date 12/2015  

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## **BMP 34.00 & 35.00. Temporary Diversion Conveyance**

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### DESIGN CONSIDERATIONS

#### *Objectives*

The purpose of Temporary Diversion Conveyance is to temporarily route a concentrated flow around a construction area and reduce sediment pollution from construction work from entering the concentrated flow.

#### *Description*

Temporary Diversion Conveyances are a ditch, pipe, or lined channel used to divert water from upstream of the project area, route it around the construction area, and discharge it downstream.

#### *Other Names*

Clear Water Diversion, Diversion Ditch.

#### *Applicability*

Temporary diversion methods are often required during culvert replacements; the construction of detention ponds, dams, in-stream grade control structures, or utility installation; and bank, channel, and other in-water maintenance and other activities that require working in waterways. Since this BMP is temporary, it would not involve additional analysis in community locations that participate in the National Flood Insurance Program; however, it should comply with local ordinances.

#### *Selection Considerations*

Temporary Diversion Conveyances will disturb the concentrated flow paths during installation and removal of diversion activities. The design should consider whether the temporary diversion will cause greater environmental impacts than if the project is constructed without temporary diversion.

Where possible, use natural streambed materials such as larger cobbles and boulders for temporary embankment/slope protection, or other temporary soil stabilization methods. If fish habitat or passage is required in the Temporary Diversion Conveyance, coordinate with Alaska Department of Fish and Game (ADF&G) for details of design.

Where possible, avoid or minimize diversion/encroachment impacts by limiting construction to periods of low flow or when the stream is dry.

Additional specific permit requirements, including allowable work time periods or mitigation measures, may be required by agencies, such as the U.S. Army Corps of Engineers, Alaska Department of Environmental Conservation, ADF&G, Alaska Department of Natural Resources, etc. The designer should allow adequate time to apply for and receive permits and be cognizant of permit requirements, in order to design a system that will meet permit conditions.

Site topography may not allow for gravity flow, in which case pumps would be required.

#### *Design*

Consider having the Regional Hydraulics Engineer review the design.

*Flow Rate:* Size for system base flow plus flows estimated from a minimum of a 2-year, 24-hour rainfall event, including runoff from drainage area during the anticipated time of construction. Consider tributary area and seasonal rainfall patterns. If there are large paved areas upslope, consider a larger sized system. Include the flow rate that will be used in the contract so the contractor can properly size the pump.

*Temporary Dams:* Select dam material to be erosion resistant, such as steel pipe plate, sheetpile, sandbags, continuous berms, inflatable water bladders, etc. Fish removal and a fish-proof barrier may be required under an ADF&G Fish Habitat Permit.

*Temporary Bypass Structure:* The structure may include one or more plastic or metal pipes or an excavated channel lined with plastic sheeting or other known non-erosive material. Determine the location of the channel and the topography along the channel route. Size the conveyance structure based on slope, conveyance roughness, and conveyance geometry (e.g., Manning's equation or similar methodology) with appropriate factors of safety or, for open channels, freeboard.

*Outlet Protection:* You must add stormwater discharge energy dissipation to the design to prevent scour and erosion at the outlet. Temporary lining of the discharge area (e.g., sandbags or riprap) may be used.



*Relationship to Other Erosion and Sediment Control Measures*

Pumped stream diversion techniques may be needed for dewatering and diverting intermittent and low flows.

*Common Failures or Misuses*

- Improper diversion sizing leading to flooding or washouts.
- Complete damming of the flow.
- Insufficient water passing downstream preventing the maintenance of aquatic life downstream.
- Stream bank stabilization is not provided causing erosion to occur.
- Barriers between the flow path and the construction area are not adequate to prevent the flow of muddy water into the concentrated flow.

SPECIFICATIONS

Standard Specification

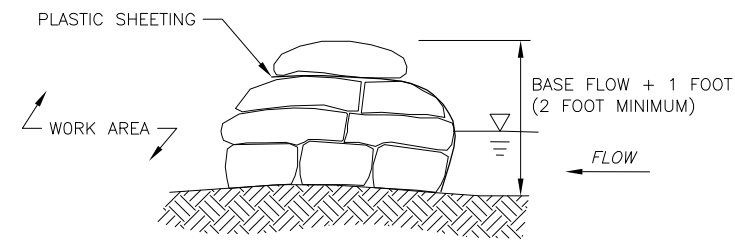
686 – Temporary Diversion Conveyance

Drawing

- BMP-34.00 Temporary Diversion Conveyance (Notes & Piped Detail)
- BMP-35.00 Temporary Diversion Conveyance (Channel Detail)

Reference Drawing

- BMP-15.00 Pumped Stream Diversion



SECTION A-A

**SANDBAG DAM**  
NOT TO SCALE

**PIPED DIVERSION NOTES:**  
**MATERIALS**

**PIPE:** A FLEXIBLE HOSE, PLASTIC OR METAL PIPE (SECTION 706-2.06, 706-2.07, 707-2.03).

**INSTALLATION**

1. USE WATERTIGHT FITTINGS AT ALL CONNECTIONS.
2. SECURELY FASTEN THE EXPOSED SECTION OF THE PIPE WITH GROMMETS OR STAKES AT 10-FOOT SPACING.
3. ESTABLISH THE FLOW IN THE PIPE AND INSTALL TEMPORARY DAMS TO FORCE WATER TO BE DIVERTED.
4. ENSURE THAT DIVERSION PIPE INLET IS SECURE AND BETWEEN THE ELEVATIONS OF THE TOP OF THE DAM AND THE STREAM CHANNEL.
5. INSTALL ENERGY DISSIPATER.

**INSPECTION**

1. INSPECT THE PIPE FOR BREAKS OR BLOCKAGE.
2. INSPECT INLET FOR SEDIMENT BUILDUP.

**MAINTENANCE**

1. INSTALL A HEADWALL IF NECESSARY TO CONTROL EROSION AROUND THE INLET.
2. REPAIR ANY BREAKS IN THE PIPE.
3. TIGHTEN FITTINGS AT LEAKING CONNECTION POINTS.
4. CLEAR ANY CLOGS THAT REDUCE FLOW THROUGH THE PIPE.

**ADDITIONAL NOTES**

1. SEE TEMPORARY DIVERSION CONVEYANCE GENERAL NOTES ON BMP-34.00 TEMPORARY DIVERSION CONVEYANCE (NOTES AND PIPED DETAIL), THIS SHEET.

**TEMPORARY DIVERSION CONVEYANCE GENERAL NOTES:**  
**MATERIALS**

**DAM MATERIAL:** SANDBAGS COVERED WITH PLASTIC SHEETING (30 MIL OR 2 OR MORE LAYERS OF 10 MIL), RIPRAP, STEEL PIPE PLATE, SHEETPILE, INFLATABLE BLADDERS, OR EQUIVALENT.

**CONVEYANCE STRUCTURE:** PIPE OR CHANNEL.

**ENERGY DISSIPATER:** RIPRAP, SANDBAGS, T-BAR SPREADER, OR EQUIVALENT

**INSTALLATION**

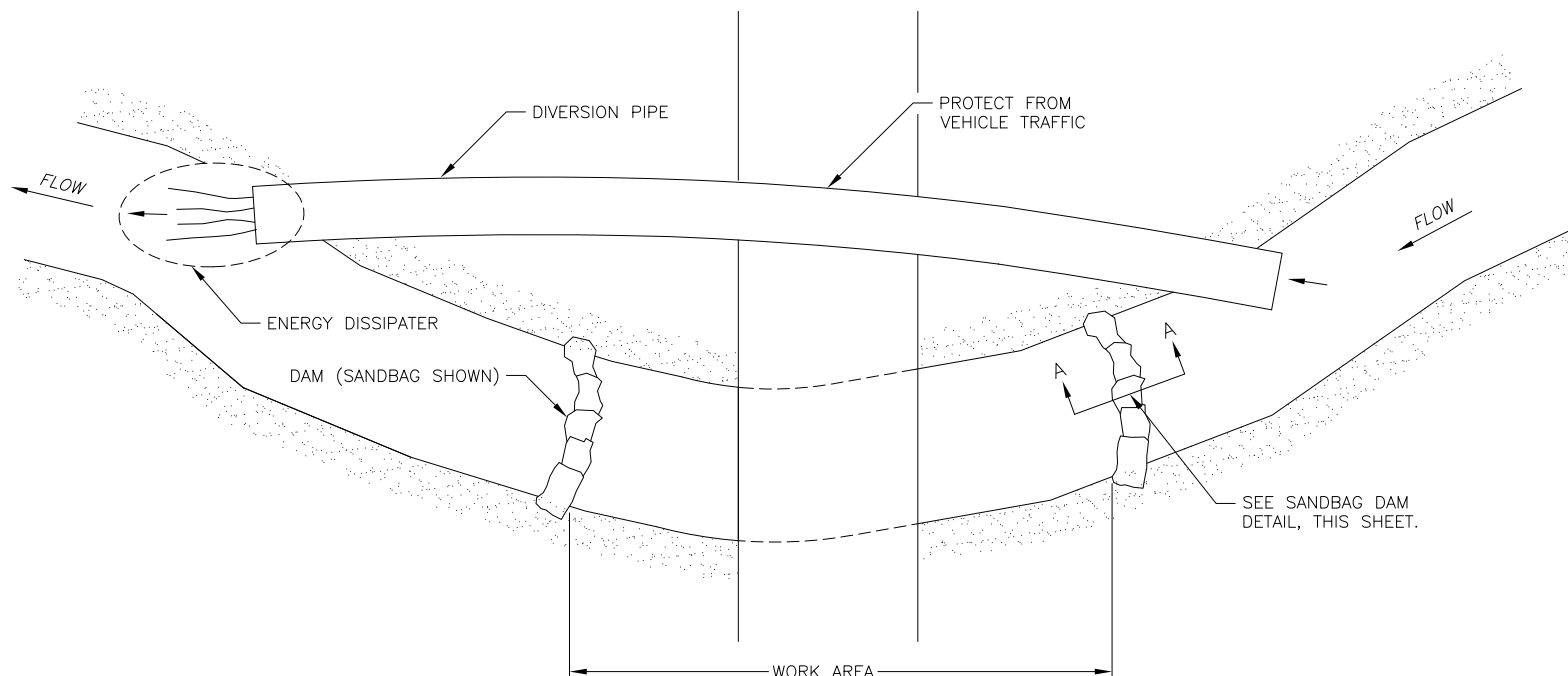
1. DISTURBANCE OR REMOVAL OF VEGETATION SHALL NOT EXCEED THE MINIMUM NECESSARY TO COMPLETE OPERATIONS.
2. INSTALL DIVERSION ON THE INSIDE OF THE STREAM BEND, WHERE POSSIBLE.

**INSPECTION**

1. INSPECT DAMS FOR OVERTOPPING, BYPASS, UNDERCUTTING, OR OTHER DEFECTS.
2. INSPECT DISCHARGE POINT FOR EROSION OR FAILURE OF THE ENERGY DISSIPATER.

**REMOVAL**

1. REMOVE TEMPORARY DAM STRUCTURES AND DIRECT FLOW TO THE ORIGINAL PATH UPON COMPLETION OF WORK.
2. RECYCLE OR RE-USE THE DAM, IF APPLICABLE.
3. BACKFILL OR REGRADE AND RESTORE THE DIVERSION CONVEYANCE TO ORIGINAL CONTOURS.
4. REGRADE AND SEED OR PERMANENTLY STABILIZE ALL DISTURBED AREAS.
5. STABILIZE AS QUICKLY AS POSSIBLE BECAUSE THE WORK IS CLOSE TO WATER.



PLAN

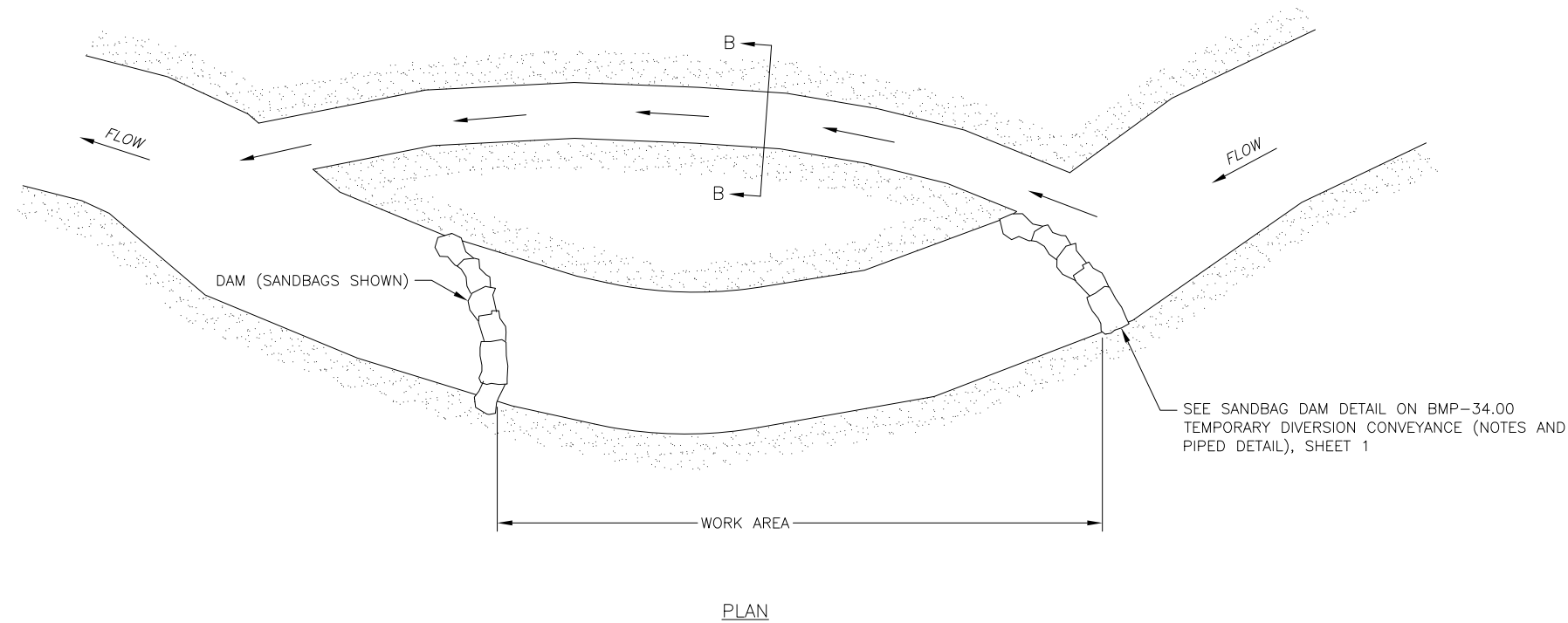
**PIPED DIVERSION**  
NOT TO SCALE

REVISIONS		
Date	Description	By

State of Alaska DOT&PF  
**TEMPORARY DIVERSION  
CONVEYANCE  
(NOTES & PIPED DETAIL)**

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Date **12/2015** X/XX/XX



**CHANNEL DIVERSION NOTES:**

**MATERIALS**

**CHANNEL LINING:** PLASTIC SHEETING (MINIMUM 30 MIL THICKNESS OR TWO OR MORE LAYERS OF 10 MIL FIBER REINFORCED THICKNESS).

**INSTALLATION**

1. REMOVE AND PROPERLY DISPOSE OF ALL TREES, BRUSH, STUMPS, OR OTHER OBJECTIONABLE MATERIAL.
2. BEGIN EXCAVATION OF THE CHANNEL AT THE PROPOSED DOWNSTREAM END AND WORK UPSTREAM.
3. EXCAVATE, SHAPE, AND STABILIZE THE DIVERSION TO LINE, GRADE, AND CROSS SECTION AS REQUIRED IN THE PLANS.
4. STOCKPILE EXCAVATED MATERIAL TO BACKFILL DIVERSION AFTER FLOW HAS BEEN RE-DIRECTED TO THE ORIGINAL PATH.
5. PROVIDE BMPs FOR THE STOCKPILE SUCH THAT SEDIMENT FROM THE STOCKPILE DOES NOT ENTER THE WATER.
6. STABILIZE THE DIVERSION AFTER INSTALLATION.
7. BREACH THE UPSTREAM END AFTER EXCAVATION FOR THE TEMPORARY CHANNEL IS COMPLETE AND THE CHANNEL IS STABILIZED.
8. ESTABLISH FLOW IN THE EXCAVATED CHANNEL AND INSTALL TEMPORARY DAMS TO FORCE ALL WATER TO BE DIVERTED.

**INSPECTION**

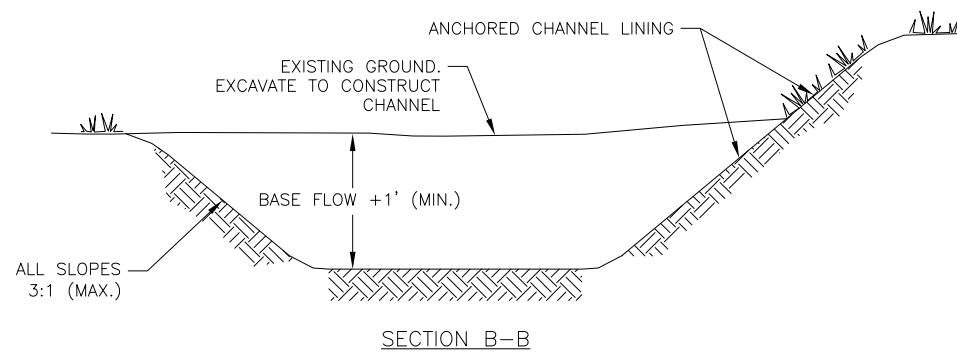
1. INSPECT FOR DAMAGE TO THE LININGS.
2. INSPECT FOR ACCUMULATING DEBRIS AND SEDIMENT BUILDUP.
3. ENSURE THE SLOPE IS ADEQUATELY PROTECTED.

**MAINTENANCE**

1. REMOVE ANY SEDIMENT OR OTHER OBSTRUCTIONS FROM THE DIVERSION CHANNEL.
2. REPAIR LININGS AND SLOPE PROTECTION.
3. REPAIR HOLES, GAPS, OR SCOUR.

**ADDITIONAL NOTES**

1. SEE TEMPORARY DIVERSION CONVEYANCE GENERAL NOTES ON BMP-34.00 TEMPORARY DIVERSION CONVEYANCE (NOTES AND PIPED DETAIL), SHEET 1.



**CHANNEL DIVERSION**  
NOT TO SCALE

REVISIONS		
Date	Description	By

State of Alaska DOT&PF  
**TEMPORARY DIVERSION  
CONVEYANCE  
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Date **12/2015** X/XX/XX

## **BMP 36.00 & 37.00. Tire Wash**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Tire Washes reduce the amount of sediment transported onto paved roads by motor vehicles.

#### *Description*

A Tire Wash is an area located at a stabilized construction exit to remove sediment from tires and undercarriages.

#### *Other Names*

Tire Wash, Vehicle Washing, Wash Station.

#### *Applicability*

Tire Washes are applicable when a Stabilized Construction Exit (see BMP-23 and BMP-24) alone is not expected to prevent sediment from being tracked onto pavement. Tire Washes are used in conjunction with stabilized construction exits.

#### *Selection Considerations*

Tire washing is generally an effective best management practice (BMP) when installed with careful attention to topography. For example, a Tire Wash can be detrimental if installed at the top of a slope abutting a right-of-way where the water from the dripping truck can run off the project area unimpeded.

Pressure washing combined with an adequately sized and surfaced pad with direct drainage to a large sump can be very effective.

#### *Design*

Suggested details are shown in Drawing BMP-36, showing a passive system and in Drawing BMP-37 showing a mechanical (spray) system. The Project Engineer may allow other designs.

Entrances and Exits: Stabilization of the roadway before and after any Tire Wash area is critical. Stabilization methods will vary depending on the traffic volumes and vehicle type. Pavement may be necessary to prevent the underlying soils from becoming saturated and contributing more sediment to the Tire Wash system. Unstabilized areas at the exit from the tire washing will be exposed to wash-water draining off vehicles and can become additional sources of sediment trackout. Stabilization

can be achieved with coarse rock (typically a 12-inch thick layer of 3- to 6-inch crushed aggregate over geotextile filter fabric), metal plates and grates or rattle racks, pavement, and/or combinations of various methods.

#### Passive and Mechanical Systems:

- Passive systems are configurations in which equipment is driven through a Tire Wash pond with no sprayers. The Tire Wash pond overflow discharges through a pipe to a sump or is routed through a drainage channel to a sediment trap/basin.
- Mechanical systems involve spraying water at the tires and undercarriages. The spray and sediment is collected in a containment structure, which may either be the Tire Wash pond or may be separated from the driving area, for instance by a grate. Mechanical systems are only needed in extremely muddy conditions. Mechanical systems may be commercially available.

Pond Depth: If the system is designed for equipment to drive through the pond, keep the water level in the pond from 12 to 14 inches deep to avoid damage to truck hubs and filling the truck trailer tongues with water.

Bottom Slope of the Pond: Tire Wash ponds, sumps, or containment areas should be designed with a small grade change, 6 to 10 inches for a 12-foot-wide pond, which will allow sediment to flow to the low side of pond to help prevent re-suspension of sediment. A drainpipe with a 2- to 3-foot riser should be installed on the low side of the pond to allow for easy cleaning and refilling.

Treatment and Discharge of Wash Water: Wash water may not be discharged to waters of the U.S. or to a municipal storm water system (MS4). Discharge Tire Wash wastewater to a separate, on-site treatment system that prevents discharge to surface water, such as closed-loop recirculation or upland land application, or to the sanitary sewer with local sewer utility approval.

Polymers may be used to promote coagulation and flocculation in a closed-loop system. Polyacrylamide (PAM) added to the Tire Wash water at a rate of

0.25 to 0.5 pounds per 1,000 gallons of water increases effectiveness and reduces cleanup time.

Vehicle Volume and Tire Wash Capacity:

Designers must consider the traffic volumes and wash water capacity in designing appropriate controls.

Frequency of Changing Wash Water: In ponds that are driven through, the Tire Wash should begin the day with fresh water and the water should be changed a minimum of once per day. On large earthwork jobs where more than 10 to 20 trucks per hour are expected, the wash water will need to be changed more often and multiple Tire Wash facilities may be necessary.

Commercial Systems: Commercial manufactured tire and wheel wash systems are available for purchase and rental. Many commercial Tire Wash systems can be installed with adjacent tanks or ponds to allow sediment to accumulate. Commercial systems that combine chemical flocculants and recirculation capabilities can reduce maintenance frequency.

*Relationship to Other Erosion and Sediment Control Measures*

Sediment control measures such as Tire Washes are secondary to erosion prevention or soil stabilizing measures. Tire Washes may be used as part of a sequential system with other temporary or permanent measures such as temporary stabilization. Tire Washes are used in conjunction with a stabilized construction exit and street sweeping.

*Common Failures or Misuses*

- Failure to change wash water or remove sediment may cause track-out.

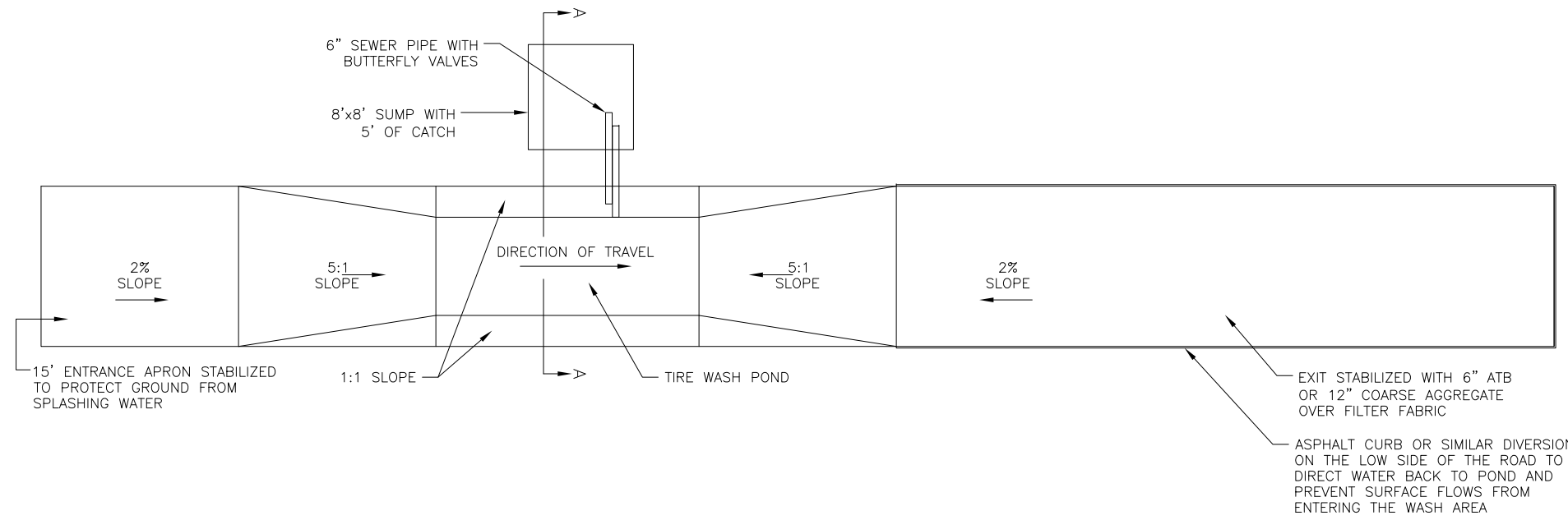
SPECIFICATIONS

Standard Specification

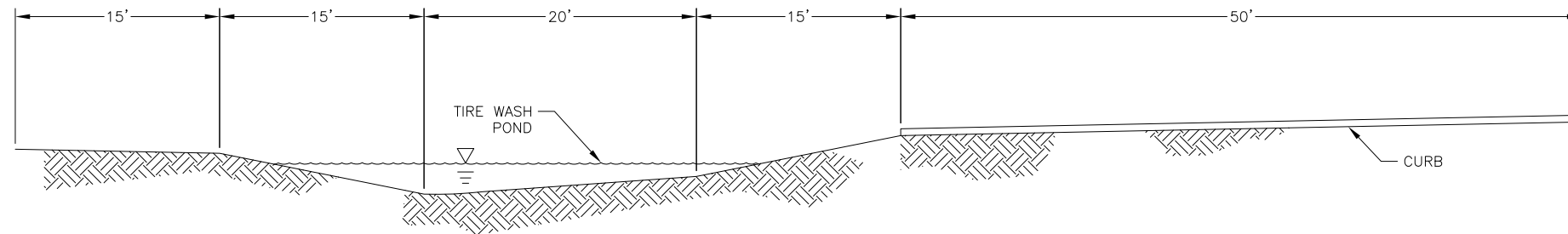
687 – Tire Wash

Drawings

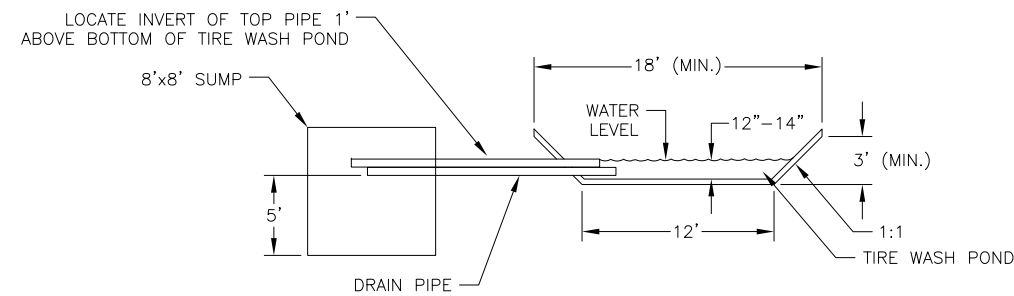
- BMP-36.00 Tire Wash (Notes & Passive System)
- BMP-37.00 Tire Wash (Mechanical System)



PLAN



ELEVATION



SECTION A-A

PASSIVE SYSTEM TIRE WASH  
NOT TO SCALE

TIRE WASH GENERAL NOTES:

MATERIALS

STABILIZATION: ASPHALT TREATED BASE (ATB) OR COARSE AGGREGATE (3-INCH TO 6-INCH STONE) AND GEOTEXTILE FABRIC

PIPE: SCHEDULE 40 PIPE, FITTINGS, AND VALVES.

PUMP: MECHANICAL SYSTEM ONLY.

SPRAY NOZZLE: MECHANICAL SYSTEM ONLY.

SUMP: TANK, PIT (IF SOIL, SLOPE THE SIDES), OR 8' OR MORE VERTICAL CULVERT PIECE.

INSTALLATION

1. CONSTRUCT THE SUMP SO THAT IT CAN BE CLEANED WITH A BACKHOE.
2. ENSURE THAT THE ENTIRE WASH AREA IS PAVED AND THERE ARE NO BARE SOILS.
3. USE A BELLY DUMP, LOWBOY OR OTHER LOW CLEARANCE TRUCK TO TEST THE TIRE WASH BEFORE STABILIZING OR PAVING.
4. TIRE WASH WASTEWATER SHOULD NOT INCLUDE WASTEWATER FROM CONCRETE WASHOUT AREAS.
5. IF PAM IS ALREADY BEING USED FOR DUST OR EROSION CONTROL AND IS BEING APPLIED BY A WATER TRUCK, THE SAME TRUCK CAN BE USED TO CHANGE THE WASH WATER.

INSPECTION

1. INSPECT FOR ADEQUATE DEPTH OF WATER IN THE POND, 12"-14".
2. INSPECT FOR SEDIMENT ACCUMULATION IN THE POND AND SUMP.
3. INSPECT FOR DISPLACEMENT OR STRUCTURAL DAMAGE TO THE STABILIZED ENTRANCE AND EXIT, POND, OR SUMP.

MAINTENANCE

1. USE FRESH WATER AT THE START OF EACH DAY IN THE POND.
2. CHANGE THE WATER A MINIMUM OF ONCE PER DAY, OR MORE OFTEN WHEN MORE THAN 15 TRUCKS PER HOUR USE THE TIRE WASH, OR AS DIRECTED.
3. DO NOT DISCHARGE WASH WATER TO WATERS OF THE U.S. OR TO A STORM SEWER SYSTEM. REMOVE AND PROPERLY DISPOSE OF EXCESS WASH WATER.
4. BEFORE SEDIMENT ACCUMULATES TO ONE-HALF OF THE DESIGN DEPTH, REMOVE SEDIMENT FROM THE SUMP.

REMOVAL

1. REMOVE AND PROPERLY DISPOSE OF THE TRAPPED SEDIMENT AND WASH WATER.
2. REMOVE ALL TEMPORARILY PAVED AREAS, SUCH AS THE ENTRANCES AND EXITS.

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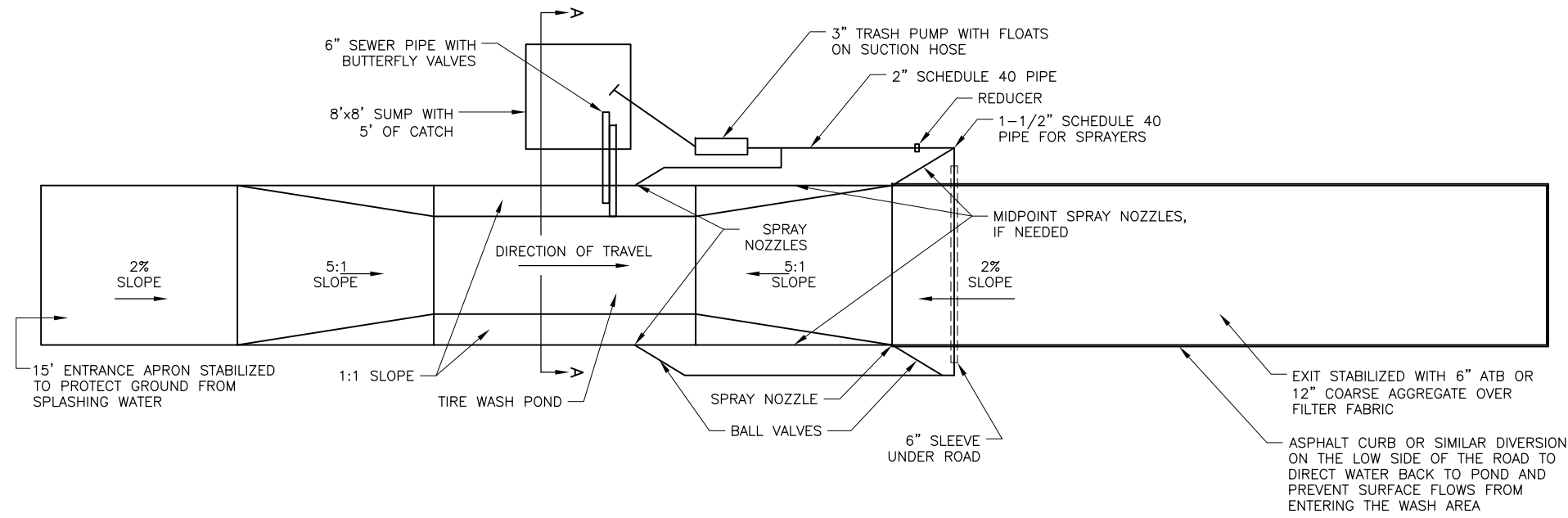
State of Alaska DOT&PF

**TIRE WASH  
(NOTES & PASSIVE SYSTEM)**

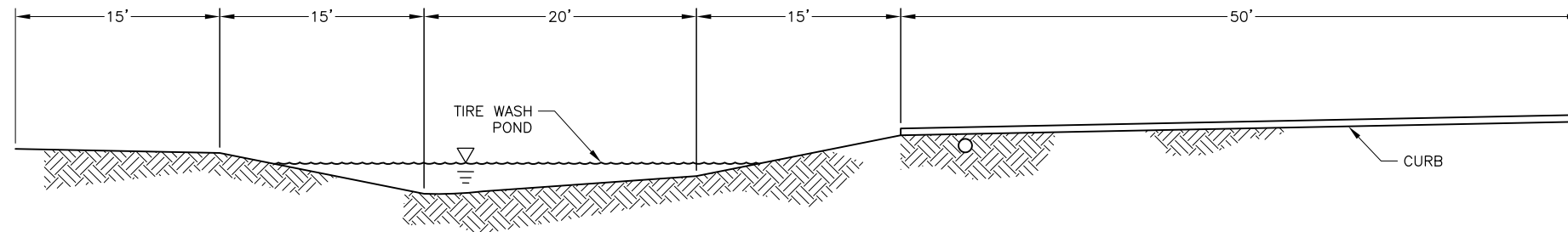
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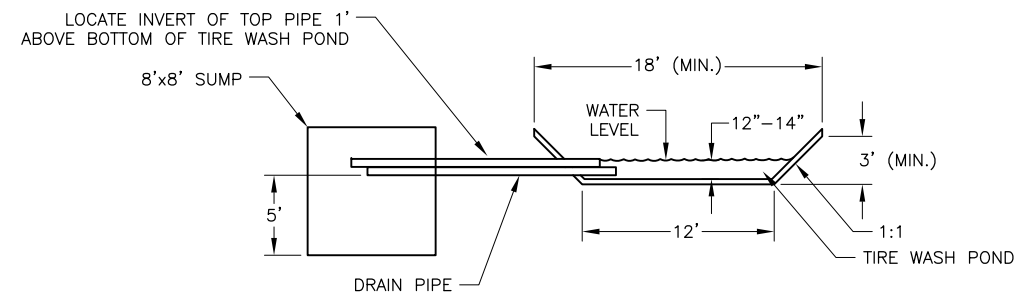
SEE TIRE WASH GENERAL NOTES ON  
BMP-36.00 TIRE WASH, SHEET 1.



**PLAN**



**ELEVATION**



**SECTION A-A**

**MECHANICAL SYSTEM TIRE WASH**  
NOT TO SCALE

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State of Alaska DOT&PF

**TIRE WASH  
(MECHANICAL SYSTEM)**

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BMP-37.00

## **BMP 38.00. Vegetation Buffer**

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### DESIGN CONSIDERATIONS

#### *Objectives*

A Vegetation Buffer is intended to reduce the quantity of suspended soil sediments in construction-related stormwater runoff by using living strips of vegetation suitable to reducing run-off velocities. The application for this type of control can include, but is not limited to the following:

- Type I – Perimeter Control - Provides a Vegetation Buffer as a perimeter control between the on-site construction related activities and the project boundaries.
- Type II – Natural Buffer - Provides a Vegetation Buffer between the construction related activities and sensitive areas such as waters of the U.S. and riparian areas (as required by the Alaska Construction General Permit [CGP]).

#### *Description*

Vegetation Buffers can be strips of existing vegetation or can be areas that are graded and planted with grass or other types of vegetation. They are intended to be used adjacent to where construction activities will occur and are primarily designed to treat sheet flow. Vegetation Buffers should not be used in areas with concentrated flows. Larger areas must be used to accommodate the larger run-off volume. These strips function by reducing the velocity of run-off to allow the suspended sediments and other pollutants to settle and partially infiltrate into the underlying soils.

#### *Other Names*

Vegetated Sediment Filtration Areas, Buffer Strips, Vegetated Strips

#### *Applicability*

Vegetation Buffer strips can be used at numerous locations over a project but are best suited if installed at locations where the soil is well drained and where the water table and bedrock are well below the surface. Vegetation Buffers may also be effectively used on the top and bottom of slopes. They can be used either temporarily or as permanent installations.

#### *Selection Considerations*

During the design phase of a project any area specified to be a natural Vegetation Buffer area should be identified. The type of vegetation, soil conditions, and the estimated volume of stormwater run-off should be considered when selecting a natural Vegetation Buffer.

Vegetation Buffer areas that are installed (or planted) should be located directly adjacent to where construction activities will occur. These areas should be graded and planted to establish a healthy vigorous stand of vegetation prior to any construction occurring. Other erosion and sediment control measures should be installed to help protect and stabilize the Vegetation Buffer while the planted vegetation becomes established.

When retaining existing vegetation as a Vegetative Buffer, minimize the disturbed areas by locating temporary roadways to avoid stands of vegetation and following the existing contours to reduce cutting and filling. To avoid disturbing the root-zone of existing trees, the edge of the tree canopy or drip-line should be noted when locating these temporary roadways.

Vegetated Buffers must be on land controlled by the project. If in wetlands, they must be recognized in the wetland permit.

#### *Design*

The designer should consider the type of Vegetation Buffer (Type I or II) and the slope of the proposed Vegetation Buffer area, the soil type and infiltration rate, the water table level, the type of proposed or existing vegetation, the estimated stormwater flow in the area, and the protection of sensitive areas. There may be site specific constraints that dictate alternate widths for a Vegetation Buffer or require the use of a different perimeter control measure.

Vegetation Buffer areas should be fully established with vegetation prior to construction occurring. A fully established Vegetation Buffer should be composed of species that are capable of growing a sod forming mass that covers 90 percent of the selected area. New Vegetation Buffers with planted vegetation should be composed of more than just one species and be hardy to the area. The



combination of species should be capable of creating a perennial stand of vegetation and be able to withstand frequent inundation from run-off. See BMP-53 Permanent Seeding.

All Vegetation Buffer areas with either naturally-occurring or planted stands of vegetation should be delineated prior to and throughout construction to prevent damage to the vegetation and its roots. All Vegetation Buffer areas should be inspected for impacts from soil deposited by construction related activities, damage from channelized run-off, excess accumulation of sediment, and disturbance or damage from construction activities. It may be necessary to employ other erosion and sediment control measures upstream to support existing Vegetation Buffer areas. Do not include the acreage of Vegetation Buffers in the acreage of disturbed areas for the purpose of the Notice of Intent (NOI) acreage.

The two types of buffers for Vegetation Buffer landscaping include the following:

Type I Perimeter Control Vegetation Buffers are used to help filter sediments from run-off before it leaves the job site. These can be composed of existing or newly planted vegetation. The length of these buffers should be determined by the steepness of the slope.

Type II Natural Buffer Vegetation Buffers are used when required by the Alaska CGP to protect sensitive areas (such as waters of the U.S. or riparian areas). The minimum width shall be 25 feet unless found to be infeasible. However, in some cases the governing local ordinance may specify an alternate minimum width. In such cases, it is the responsibility of the designer and the contractor to review and adhere to the specific requirements for a Vegetation Buffer in the local ordinance. Local ordinances governing nonpoint source pollution in Alaska can be found here:

<http://www.commerce.state.ak.us/dca/nonpoint/ordinances.cfm?type=Hy>

#### *Relationship to Other Erosion and Sediment Control Measures*

Vegetation Buffer areas with existing vegetation may not require other erosion and sediment control measures; however, installing or planting new Vegetation Buffer areas will require other erosion

and sediment control measures during the establishment period of the specified vegetation.

#### *Common Failures or Misuses*

Common failures are generally due to faulty application and maintenance. These failures include:

- Damage to the roots or stalks of the vegetation from construction activities.
- Overwhelming the buffer with excessive quantities of stormwater run-off, sediments, channelized run-off, and pollutants.
- Inadequate subsurface soil, vegetation, and size of Vegetation Buffer strip
- Non-observance of delineated Vegetation Buffer areas.
- Designer does not visit site and fails to take site specific conditions into account.

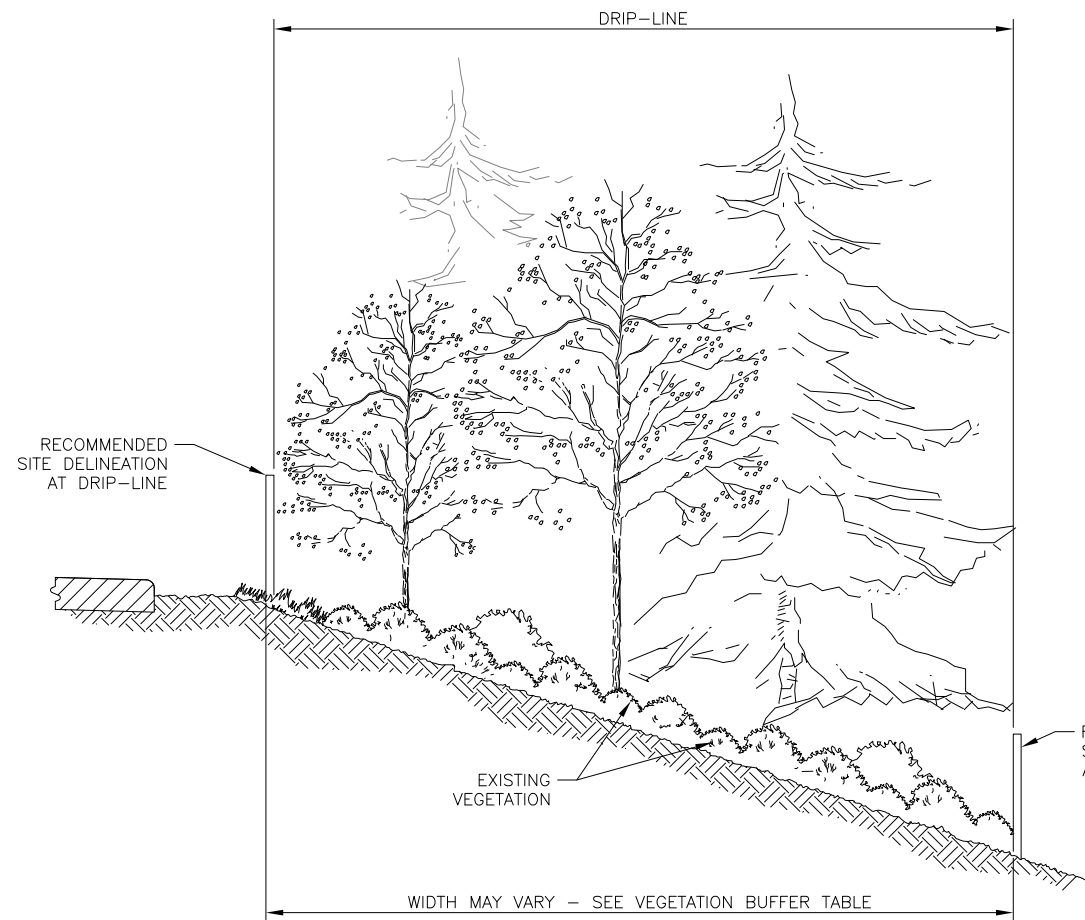
#### SPECIFICATIONS

##### Standard Specifications

- 688 – Vegetation Buffer
- 201 – Clearing and Grubbing
- 203 – Excavation and Embankment
- 620 – Topsoil
- 651 – Hydraulic Erosion Control Product
- 652 – Soil Amendments
- 655 – Site Delineation
- 712-2.01 – Water
- 724 – Seed
- 725 – Fertilizer
- 726 – Topsoil
- 751 – Hydraulic Erosion Control Products
- 752 – Tackifier
- 753 – Soil Amendments

##### Drawing

- BMP-38.00 Vegetation Buffer



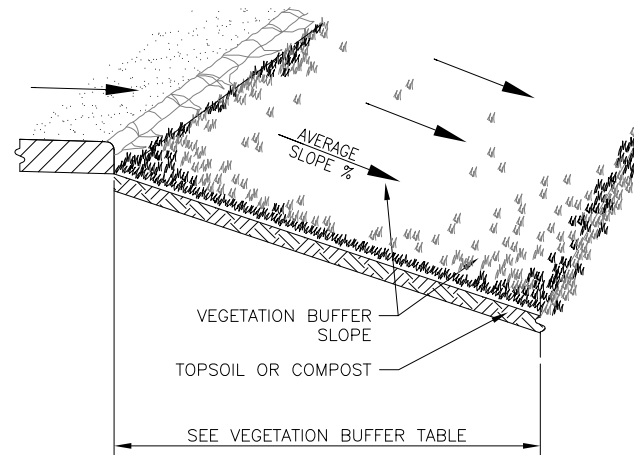
SECTION

EXISTING VEGETATION BUFFER

NOT TO SCALE

EXISTING VEGETATION BUFFER AREA NOTES:  
INSTALLATION

1. DELINEATE UNDISTURBED NATURAL AREAS OF VEGETATION IDENTIFIED IN THE PLANS WITH METHODS CONSISTENT WITH THE SITE DELINEATION SPECIFICATION PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING OPERATIONS OR OTHER SOIL DISTURBING ACTIVITIES.
2. ENSURE ALL OTHER SEDIMENT CONTROL MEASURES USED IN CONJUNCTION WITH THE VEGETATION BUFFER AREAS ARE IN PLACE AND FUNCTIONING PROPERLY.
3. DO NOT ALLOW CONSTRUCTION MATERIALS, EQUIPMENT, OR PARKING ON THE VEGETATION BUFFER AREAS OR WHERE THE ROOT-ZONE OF THE VEGETATION MAY BE DAMAGED.



PERSPECTIVE

NEW VEGETATION BUFFER

NOT TO SCALE

NEW VEGETATION BUFFER AREA NOTES:  
THIS BMP IS NOT APPROPRIATE FOR PROJECTS LASTING LESS THAN 30 DAYS. THIS BMP IS NOT APPROPRIATE FOR ALL CLIMATE ZONES IN ALASKA.

MATERIAL  
TOPSOIL OR COMPOST

SEED, FERTILIZER, MULCH

INSTALLATION

1. ENSURE ALL SEDIMENT CONTROL MEASURES IDENTIFIED IN THE SWPPP (SUCH AS SILT FENCE AND DIVERSIONS) ARE IN PLACE TO PROTECT WATERS OF THE U.S. UNTIL THE VEGETATION BUFFER AREA IS ESTABLISHED.
2. ESTABLISH VEGETATION USING SPECIFIED SEED, FERTILIZER, AND MULCH. IF SEED MIX IS NOT SPECIFIED, USE PERMANENT SEED MIX FOR PERMANENT, POST-CONSTRUCTION BUFFERS AND FAST GROWING ANNUAL RYE FOR TEMPORARAY BUFFERS.
3. MAINTAIN VEGETATION AND PROVIDE IRRIGATION AS NECESSARY TO ENSURE VIGOROUS GROWTH AND TO PREVENT DIEBACK.
4. DELINEATE VEGETATION BUFFER AREAS WITH METHODS CONSISTENT WITH THE SITE DELINEATION SPECIFICATION AT THE EDGE OF THE NEW VEGETATION BUFFER.
5. AVOID DAMAGE TO THE VEGETATION BUFFER OR ROOT-ZONE BY NOT ALLOWING CONSTRUCTION MATERIALS, EQUIPMENT OR PARKING ON THEM.

VEGETATION BUFFER NOTES:

MATERIAL

SITE DELINEATION MATERIAL: SEE SPECIFICATION SECTION 655 SITE DELINEATION.

INSPECTION

1. INSPECT NATURAL EXISTING VEGETATION BUFFER AREAS TO ENSURE THAT THE SITE DELINEATION TO MARK THE NON-DISTURBANCE AREAS IS IN PLACE.
2. CHECK FOR DAMAGE BY EQUIPMENT AND VEHICLES.
3. INSPECT NEW VEGETATION BUFFER AREAS FOR THE PROGRESS OF GERMINATION AND PLANT GROWTH.
4. ENSURE STORMWATER FLOWING THROUGH THE AREA IS NOT FORMING PONDS, RILLS, OR GULLIES.
5. INSPECT FOR SEDIMENT DEPOSITION THROUGHOUT THE BUFFER.

MAINTENANCE

1. REPLACE OR REPAIR SITE DELINEATION (SUCH AS FENCING, STAKING, OR FLAGGING) AS NECESSARY TO DELINEATE THE VEGETATION BUFFER AREAS.
2. REPAIR ANY DAMAGE BY EQUIPMENT OR VEHICLES.
3. PROVIDE ADDITIONAL SEED, FERTILIZER, AND WATER TO REPAIR SEEDED AREAS DAMAGED BY EROSION OR PONDING OF WATER.
4. IF SEDIMENT IS DEPOSITING IN THE BUFFER, INSTALL IMPROVED EROSION CONTROL MEASURES UPSLOPE OF THE BUFFER.

REMOVAL

1. PROVIDE THE NECESSARY PERMANENT STABILIZATION TO AREAS WITH TEMPORARY VEGETATION BUFFER AS REQUIRED BY PLANS.
2. REMOVE SITE DELINEATION MATERIAL AFTER FINAL STABILIZATION OF WORK AREAS. WORK TO REMOVE THE SITE DELINEATION MATERIAL SHALL NOT DAMAGE THE EXISTING VEGETATION OR ANY STABILIZATION MEASURE.

VEGETATION BUFFER TABLE

AVERAGE SLOPE	BUFFER WIDTH (MIN.)
0%-2%	25 FEET
3%-5%	29-37 FEET
5%-10%	37-57 FEET
10%-20%	57-100 FEET
20% MAXIMUM	100 FEET

VEGETATION BUFFER TABLE NOTES:

1. THE MINIMUM WIDTH FOR ANY VEGETATION BUFFER IS 25 FEET. FOR EVERY 1% INCREASE OF THE SLOPE ADD 4 FEET TO THE VEGETATION BUFFER WIDTH.
2. INSTALL VEGETATION BUFFERS ENTIRELY WITHIN THE RIGHT-OF-WAY.
3. FOR VEGETATION BUFFERS THAT ARE USED AS PERIMETER CONTROL (TYPE 1):
  - a. THE MINIMUM WIDTH FOR ANY VEGETATION BUFFER IS 25 FEET WHEN BUFFER WIDTHS LISTED IN THE TABLE ABOVE ARE NOT FEASIBLE.
  - b. USE ADDITIONAL BMPS WHEN THE MINIMUM BUFFER WIDTH CANNOT BE ACHIEVED.
4. THE WIDTH OF VEGETATION BUFFERS THAT ARE NATURAL BUFFER AREAS AS REQUIRED BY THE CGP (TYPE II) MUST ALSO COMPLY WITH THE WIDTH REQUIRED BY LOCAL ORDINANCES, IF GREATER THAN 25 FEET.

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State of Alaska DOT&PF  
**VEGETATION  
BUFFER**

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## **BMP 50.00. Compost Blanket**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Compost Blankets are applied to the soil surface to control erosion and retain sediment. When properly applied the compost forms a blanket that completely covers the ground surface. The resulting blanket prevents erosion by facilitating infiltration and reducing the rate of rill erosion. Quality compost can promote vegetation establishment and enhance soil structure.

#### *Description*

Compost Blankets are a layer of composted material loosely applied to the soil surface by blower trucks or mechanical / hand spreading.

Compost Blankets are uniformly applied to a specified depth - typically 1 to 3 inches. Standard details call for 2-inch blankets, with research showing benefits as thin as 1-inch; however, controlling a 1-inch application is difficult in the field. Too much compost can cause long term challenges for vegetation establishment

Compost can vary from fine to coarse in its gradation. Compost is also specified as a soil amendment, where a uniform blanket is applied as specified and then mixed with the soil by disking or tilling the layer into the soil.

#### *Applicability*

Compost Blankets can be used to reduce erosion and assist in vegetation establishment where availability of quality topsoil for revegetation is limited and site access to an available compost source is practical.

- Compost can be placed on any soil surface; however, the interface must provide sufficient friction to prevent the blanket from slumping when saturated. The steeper the application, the rougher the subgrade should be.
- Climate conditions will affect gradation selection: wetter climates will require coarser compost than drier locations.
- Site locations exposed to high winds will require a coarser compost and/or tackifier to prevent wind erosion.

- Compost Blankets are not applicable for locations with concentrated flow.

Application methods must be considered in the selection of Compost Blankets. Trucking, spreading, blower truck access, and availability of compost meeting specifications all must be taken into consideration when specifying compost blankets.

The compost must comply with the processes, testing, and standards specified by the U.S. Composting Council Testing Methods for the Examination of Compost and Composting (TMECC) and Standard Specification Section 750 Compost. An independent Seal of Testing Assurance (STA) Program certified laboratory shall perform the analyses.

#### *Selection Considerations*

- Compost Blankets should be considered where existing soils lack organic material and vegetation will be difficult to establish for final long term stabilization.
- Steeper slopes require a coarser compost to resist slumping.
- Compost Blankets are not generally used on slopes greater than 2:1 and should not be used on slopes steeper than 1:1. They may be used on slopes between 2:1 and 1:1 if cellular confinement systems are used in conjunction with the Compost Blanket.
- Site location and access should be planned to make compost delivery feasible. The compost can be distributed manually by using hand tools, or by mechanical means such as bulldozer or pneumatic spreader.
- Because compost must have laboratory certifications, the designer should determine if compost complying with specifications is available for use on the project.

#### *Design*

Designers must consider the type and gradation of compost available to a project area to determine if the use of a Compost Blanket is feasible.

- Fine gradation compost will not be appropriate for steep slopes in a wet climate area without the addition of mechanical incorporation techniques or additional coarse material amendments.
- Very coarse compost should be avoided on slopes that will be landscaped as it will make planting and vegetation establishment more difficult.
- Thicker and/or coarser Compost Blankets are recommended for areas with higher annual precipitation or rainfall intensity.
- Specify that the Compost Blanket is to extend at least 3 feet over the shoulder / crown of the slope to prevent run-off from flowing under the blanket. Alternately, designers may consider diversion berms or ditches to direct surface flows around the blanket installation.
- Designers must also specify that the surface will be prepared with Surface Roughening (drawing BMP-24.00). A rough subgrade will reduce the potential for the blanket to slough when saturated. Subgrade soil with high silt or clay content may require more aggressive surface roughening. The greater the silt and clay content the higher the potential of a slippery surface under the Compost Blanket. On granular soils, standard trackwalking techniques may be adequate depending on the slope steepness.
- Too much compost can cause long term challenges for vegetation establishment.
- Weed seeds and undesired elements may be introduced and require eradication or removal.
- Slumping of the Compost Blanket due to improper surface preparation lacking roughness, friction elements, or scarification.
- Slumping due to water retention of fine grained compost materials on steep slopes.
- Placement in areas of concentrated flows.

#### SPECIFICATIONS

##### Standard Specification

- 650 Compost Blanket
- 750 Compost

##### Drawing

- BMP-30.00 Surface Roughening

#### *Relationship to Other Erosion and Sediment Control Measures*

Compost Blankets can be used as a stand-alone soil stabilization measure during periods when seed germination is not possible. The compost can further benefit vegetation establishment during the growing period. Seeding techniques must still be specified when using Compost Blankets. Some blower trucks may be able to incorporate seed into the compost during application. If hydraulic seeding techniques will be used over the Compost Blanket, the mulch selection guidelines found in Hydraulic Erosion Control Products (BMP 51) must be followed.

#### *Common Failures or Misuses*

- Selection of or allowing inappropriate compost gradation or substandard feedstock can create maintenance problems, problems with vegetation establishment, and may be detrimental to water quality.

## **BMP 51.00. Hydraulic Erosion Control Products (HECP)**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Hydraulic Erosion Control Products (HECPs) are designed to reduce soil erosion and assist in the establishment and growth of vegetation. The HECP forms a protective layer that controls erosion and allows for enhanced seed germination and accelerated plant growth.

HECPs are often used in combination with seed and fertilizer for revegetation but can be used alone for temporary stabilization of bare soils.

#### *Description*

A HECP is a manufactured, temporary, degradable, pre-packaged fibrous material that is mixed with water and hydraulically applied as a slurry.

When applied, the HECP creates a continuous, porous, absorbent, moisture retaining, flexible blanket/mat/mulch/covering making intimate contact with, and adhering to, the sloped soil surface. The applied HECP permits water infiltration, resists erosion, and promotes rapid germination and accelerated plant growth.

The HECP will achieve maximum performance after a sufficient curing period, which will vary based upon the manufacturer's recommendations and site specific conditions.

Tackifiers are chemical compounds used in formulating adhesives to increase the stickiness of the surface. They are used to glue the fibrous HECP material to itself and the soil surface.

#### *Other Names*

Hydromulch, Bonded Fiber Matrix (BFM), Flexible Growth Medium (FGM), Fiber Reinforced Matrix (FRM), and many others. Some terms may be trademarked and describe a single product as opposed to a product category.

#### *Applicability*

HECPs vary in their functional performance longevity, strength to resist shear stress, and fiber types. Wood, straw, cotton, flax, and hemp fibers have all been used in the production of HECPs.

Many HECPs contain a tackifier to bind the fibers together and form a mat over the soil. Others do not.

HECPs without tackifiers are limited to flat or low slopes and infrequent or low amounts of rainfall. HECPs with tackifiers are more expensive, but have better performance in areas with moderate to steep slopes and frequent or moderate to heavy rainfall. They are applicable for any site where there is sufficient time for the tackifiers to cure. Some tackifiers will be able to cure in some precipitation, but none can cure during significant precipitation. Availability of water to mix with the product and site access constraints must be considered when specifying HECPs.

By themselves, HECPs are not applicable in areas with concentrated flow.

#### *Selection Considerations*

HECPs must be selected based on expected rainfall, prior performance, the length of time the product is needed to perform (i.e., the functional longevity), and the shear stress (a factor of the slope length and gradient) that the HECP will be exposed to. If site conditions require an expensive product because of harsh environmental conditions, then specify it or consider using a rolled product instead.

The Erosion Control Technology Council (ECTC) provides designers with selection information based on independent testing to supplement manufacturer's design standards

#### *Design*

The following table provides guidance on terms used in describing HECPs for typical applications:

Hydraulic Erosion Control Design				
Term	Functional Longevity	Typical Application Rates	Slope Gradient (H:V)	Slope Length
	months	lb/acre	< or =	feet
Moderate	3	2000-3000	4:1	25
Extended Moderate	6	2000-3500	3:1	50
Long	12	2500-4000	2:1	75
Extended Long	18	3000-4500	0.5:1	100

*This table is for general guidelines only and is adapted from the Erosion Control Technology Council. Refer to manufacturer for application rates, instructions, gradients, maximum continuous slope lengths and other site specific recommendations*

When estimating quantities needed, account for the increased surface area created as a result of surface roughening and due to the slope length, rather than horizontal length, on sloped sites. Surface roughening alone may require 30 percent more surface area to which the HECP must be applied. This 30 percent increase should be added to the planned seeding quantity too.

If a diversion is required at the top of the slope to handle run-on, then include the diversion details in the plans.

#### *Relationship to Other Erosion and Sediment Control Measures*

HECPs are most commonly used in conjunction with seed and fertilizer mixes to vegetate bare soil areas. The HECP is mixed into an homogenous slurry to carry the seed and fertilizer mixture. The HECP must last long enough to provide erosion control while the seed germinates and the vegetation establishes. In order to provide effective erosion control, the HECP must cover all the roughened bare soils to prevent raindrop erosion and the HECP must stay in place to prevent seed creep or migration.

#### *Common Failures or Misuses*

- The most common problem with the use of HECPs is a lack of adequate coverage. Without 100 percent of the soil covered, or with a thinner than specified coverage, raindrop erosion can

occur, leading to inadequate seed and fertilizer distribution, seed migration, and vegetation establishment failures. Without proper coverage of desired vegetation, weed species are likely to take root and crowd out the specified plants.

- Inadequate coverage may result from only applying the HECP from one direction.
- Areas to be seeded are frequently underestimated and actual disturbed areas are much larger than anticipated. Strict adherence to bid items based on under-estimated quantities may lead to inadequate coverage, erosion, and failed revegetation.
- Another leading cause of inadequate coverage is lack of accounting for the increased surface area created as a result of surface roughening, which can add 30 percent more surface area to the soils. Combined with take-off measurements on flat plan sheets for sloped sites, field crews often under-apply HECPs compared with the specified rate.

#### SPECIFICATIONS

##### Standard Specifications

- 651 and 751 Hydraulic Erosion Control Products

## **BMP 52.00 & 53.00. Permanent Seeding and Soil Amendments**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Permanent Seeding is an erosion control measure intended to establish a perennial vegetation cover and provide full stabilization of a disturbed area. Protecting the soil with well-established perennial stands of grass, or other forms of vegetation, is one of the most effective methods of reducing erosion.

Soil amendments are commonly used in conjunction with Permanent Seeding to improve the soil. Application of the appropriate soil amendment(s) should reduce the potential for soil erosion and restore the health of the soil by improving soil structure. Amending the soil structure will improve the soil's water-holding capacity; and improve the infiltration rate and the ability to support vegetation.

#### *Description*

Permanent Seeding is applied to areas where construction has permanently ceased. The seed mix should be composed of several species and designed to establish a permanent perennial stand of vegetation that can survive in the area. Permanent Seeding should be accompanied by surface preparation, surface roughening, fertilizers, and mulch. Surface preparation and roughening enhance seed retention and germination, fertilizer boosts initial growth, and mulch retains moisture.

Soil amendments include topsoil, compost, shredded bark or wood chips, peat, biofertilizers, and mycorrhizae. Most soil amendments, except biofertilizers and mycorrhizae, should be tilled or blended into the soil.

#### *Other Names*

Permanent Seed Stabilization, Seeding with Soil Amendments, Compost Blanket with Seeding, Bonded Fiber Matrix with Seeding, Topsoil, and Seed.

#### *Applicability*

Permanent Seeding is a final stabilization measure that is generally required for all disturbed areas that are not otherwise stabilized (by paving, structures, landscaping, etc.). It should be completed in areas where ground disturbing activities have permanently ceased.

Seeding with soil amendments provides an additional control where the soil needs to be treated to support a stabilized vegetative mat. Soil amendments should be provided in areas where the soil is highly erodible and/or has poor nutrient content or structure. For example, a sandy soil needs organic matter added in order to increase the water and nutrient holding capacity.

#### *Selection Considerations*

- *Seed:* The designer should specify appropriate seed species based on the climatic and environmental conditions. The Alaska Department of Natural Resources (DNR) Plant Material Center manuals provide guidance for revegetation in Alaska, and include the *Revegetation Manual for Alaska, Interior Alaska Revegetation and Erosion Control Guide*, and the *Coastal Revegetation and Erosion Control Guide*. These manuals give recommended seeding species and planting dates. The dates to apply seed are dependent on the climatic conditions of the project location. These dates should be provided in the special provisions for each project.
- *Soil Amendments:* Soil amendments should be selected to increase the infiltration rate of water; improve the soil's fertility, texture, and structure; aid in the uptake of nutrients; help to stabilize the soil; aid in seed germination; increase microbial activity; and promote vegetation establishment.

When considering a soil amendment, the designer should consider how the amendment will improve the soil properties; such as the organic content and textural class, how long the amendment must remain in the soil, and the climate and ecology of the area

#### *Relationship to Other Erosion and Sediment Control Measures*

With or without soil amendments, seeding can be used alone but it is likely that other measures should be considered to protect and support seed establishment. Construction stormwater management control measures should be used up-gradient to prevent potential washouts. Sediment

control measures should be used to prevent the release of sediments to and from the treated area.

### *Design*

*Seed Selection and Application Rate:* Seed mix species should be carefully considered for each project. Several mixes may be applicable for a project depending on proximity to wetlands, roadways, and various microclimates in the general environment. The Alaska Plant Materials Center can assist with selecting species for all types of environments found in Alaska. Typically, seeds are applied at 20 - 40 lbs./acre, although site-specific conditions can affect how much seed needs to be applied. Add 30 percent to the quantity if surface roughening is required.

*Fertilizer and Application Rate:* Fertilizer should be used when establishing new seed. It is best to test the soils for existing nutrient content and pH to determine the appropriate fertilizer. If testing cannot be done until slopes are finished, then require a fertilizer application rate of 450 lb./acre of 20-20-10 (percent nitrogen-phosphorus-potassium) as an interim placeholder in the bid documents and the Engineer should adjust the fertilizer rate based on the test results.

*Mulch:* Mulch should be used when establishing new seed. Mulch helps to hold the seed to the soil surface and helps to retain moisture during seed germination. The application rate for mulching during seeding is approximately 2,000 to 4,500 lbs./acre, depending on the steepness of slopes. On slopes steeper than 3:1, tackifier should be added to the mulch (BMP 57).

*Soil Stabilizer.* For steeper slopes or more erodible soils, hydraulic erosion control products (HECP, BMP 51) can be considered for additional soil stabilization.

*Soil Testing:* This is recommended when there is uncertainty regarding the fertilizer application rate or when there are risk factors for successful grass growth. It is possible to require the contractor to sample soils, but it may be preferable to have trained Alaska Department of Transportation & Public Facilities (ADOT&PF) staff collect soil samples for laboratory analyses. If it is feasible to test the soils for their pH and nutrients, then the Project Engineer is able to change the fertilizer requirement according to the test results. The existing soil or imported

topsoil can be tested to identify the soil's composition of organic matter, macro nutrients, soil texture, and pH. For more information, contact the regional stormwater specialist. Add a special provision if you determine that the contractor should test the soil once graded.

*Soil Amendment Options:* There are many different soil amendments in addition to fertilizer that can be applied to a project. Selecting a soil amendment can depend on location of a project and availability of the amendment. These soil amendments include the following:

- *Topsoil:* When used as a soil amendment, topsoil should be tilled or blended into the existing soil.
- *Compost:* Compost should comply with the U.S. Composting Council Testing Methods and with specified gradation for each project. Compost can be applied to almost any soil. Compost can be used in wet climates or in the wet season, whereas topsoil or other soil amendments may be prone to erosion. When used as a soil amendment, compost should be tilled or blended into the existing soil.
- *Shredded Bark or Wood Chips:* Although the composition of bark or wood chip will vary per application, material should not contain any materials that would inhibit or stunt vegetation growth. All material should be kept moist prior to the application of seed. When used as a soil amendment, shredded bark or wood chips should be tilled or blended into the existing soil before seeding.
- *Peat:* Peat can be used as a soil amendment when the existing soil texture is sandy. Application of peat will enhance the existing soil by providing organics and increase the water holding capacity. Peat may be applied to the surface or tilled or blended into the soil. It should be applied at a thickness of 1 to 2 inches and, if specified, tilled or blended into the top 4 to 6 inches of the existing soil. When tilled or blended in, the peat composition should be approximately 15 to 25 percent of the soil.

Peat is naturally acidic. The existing soil should be tested for pH levels so the appropriate quantities of peat can be applied. Over-



application could result in limited growth of some seed species.

- **Biofertilizers and Mycorrhizae:** Biofertilizers and mycorrhizae are soil amendments that can be used to increase the success and shorten the establishment period of vegetation. When applied, biofertilizers and mycorrhizae help to rebuild living soil that has become damaged during earthwork. Biofertilizers and mycorrhizae help to increase microbial activity in soil resulting in increased nutrient availability to plant roots.

#### *Common Failures or Misuses*

Common failures are generally due to faulty application and maintenance. These failures include:

- Seed and slurry mix is not applied with a multi-directional flow or is applied at an inadequate application rate, resulting in non-uniform coverage or stabilization.
- The mulch, tackifier, or HECF (including bonded fiber matrix) used is inadequate to hold seed on slopes, resulting in erosion and washouts.
- Temporary seed, if not appropriately removed, may inhibit growth of permanent grass.
- Seed is not properly or adequately irrigated.
- Seed is floated away due to over-irrigation or by excessive rainfall.
- Seeded areas are disturbed by foot traffic and/or equipment after installation.
- Treated areas are compacted after the seed and amendments are applied.
- Soil amendments are inadequate to support seed growth.
- Supportive Construction Water Management or Sediment Control best management practices (BMPs) are not installed or maintained correctly.
- Fertilizer application is inadequate.
- Fertilizers with high, or quick-release, phosphorus content are used with biofertilizer and mycorrhizal soil amendments.

- Fungicides are used on or around areas that have received biofertilizers and mycorrhizal amendments.
- Inadequate quantities of amendments containing biofertilizers and mycorrhizae are applied.
- Seeding is applied too late in the season, resulting in limited growth and germination prior to freeze up.

#### SPECIFICATIONS

##### Standard Specifications

- 652 - Soil Amendments
- 650 - Compost Blanket
- 651 - Hydraulic Erosion Control Products
- 620 - Topsoil
- 712.201 - Water
- 724 - Seed
- 725 - Fertilizer
- 752 – Tackifier
- 750 – Compost
- 753 – Soil Amendments
- 751 Hydraulic Erosion Control Products

## **BMP 54.00. Site Delineation**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Site delineation measures are intended to mark (1) all areas where land disturbing activities will occur, including clearing and grading, and (2) specific areas that will be left undisturbed, such as trees, boundaries of sensitive areas, or environmental buffer zones, prior to work beginning. Buffer zones may include those at stream crossings and around the edges of any wetlands or waters of the U.S. that are located within or immediately adjacent to the property where the construction activity will take place.

This measure is intended to comply with the requirements of Alaska Construction General Permit.

#### *Description*

Site delineation measures may be physical barriers, such as temporary fencing, or visual indications, such as staking and flagging, used to delineate specific areas. They are intended to remain until construction activity is completed. The most common measures include temporary fencing, survey flagging tape, stakes, paint on asphalt or concrete, and signs.

#### *Other Names*

Flagging, temporary fencing, high-visibility fencing, staking, signs, paint markings.

#### *Applicability*

Site delineation applies to all construction projects involving land disturbing activities.

#### *Selection Considerations*

Choose marking materials that have high visibility and contrast with the natural surroundings. Select materials based on ability to last for the duration of construction. This is especially important for construction that will span multiple seasons, or last several years.

Sensitive areas and their buffers may require more substantial protection, such as work zone safety fences. Silt fence, in combination with survey flagging, can be an acceptable method of marking sensitive areas and buffers. However, silt fencing

should only be used for this purpose if it is also needed for, and properly installed and maintained as, a sediment control measure.

If fencing other than orange fencing is used, provide signage with wording describing the purpose of the fence.

If signs are to be used, specify the type and spacing of signs and the wording on the sign, such as 'No Entry,' 'Keep Out,' 'No Grade Change', 'No Work, Storage Of Materials or Equipment Permitted Beyond This Point,' or other appropriate directive. Specify minimum lettering size for signs.

For long linear projects that are constructed in phases, consider the following:

- Provide delineation to protect adjacent out-of-phase areas that are not part of the current phase of construction.
- Specify installation of site delineation to coincide with phases of construction so that the length of time the site delineation must be inspected and maintained is sufficient but no longer (too far in advance) than necessary.

#### *Common Failures or Misuses*

- Failure to install prior to land disturbing activities.
- Inappropriately using materials intended for other purposes. For example, silt fencing material should not be used unless it is properly installed as a sediment control measure (BMP-20).
- Installing markers too close to areas of construction activity; failure to provide adequate maneuvering room for construction activities.
- Damage to markings and flagging cut down during clearing activities.
- Using products that are easily vandalized by humans or disturbed by animals.

SPECIFICATIONS

Standard Specification

655 – Site Delineation

## **BMP 55.00. Street Sweeping and Vacuuming for Sediment Control**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Street Sweeping and Vacuuming for Sediment Control is used to remove sediment from paved surfaces to prevent it from entering storm drain systems or waters of the U.S.

#### *Description*

Sediment is removed from roads and paved surfaces by power sweepers or manual methods and disposed of in a controlled sediment disposal area.

#### *Applicability*

Sweeping is implemented anywhere sediment is tracked from the project area onto public or private paved roads and other paved surfaces. Street Sweeping and Vacuuming for Sediment Control should be conducted when sediment accumulation is visible on paved surfaces. Typically, this will be concentrated at the exit to the construction site

#### *Selection Considerations*

- Sweepers that pick up sediment and control dust emissions should be specified. Of the four types of mechanical power sweepers available, three (vacuum, regenerative air, and high efficiency sweepers) are acceptable. Prohibit the use of methods that use only mechanical kick brooms. Conventional mechanical broom sweepers have been found to have a negative effect on the amount of stormwater runoff pollution. Mechanical sweepers may only be used if followed by a vacuum-assisted sweeper.
- Manual broom sweeping with pickup is acceptable. On smaller construction sites and in areas not accessible by power sweepers, sweeping can be conducted manually using a broom and shovel.
- The use of leaf blowers and other similar equipment for sweeping is unacceptable.
- Reasonable measures must be employed to prevent dust from becoming airborne during any operation where material that may create dust is handled, transported, or stored.

- If the sediment or soil is wet or muddy, paved surfaces will need to be scraped manually or mechanically.

#### *Relationship to Other Erosion and Sediment Control Measures*

Erosion and sediment control measures in the contributing areas must be in place to minimize the amount of sediment that must be swept. Stabilized Construction Exit (BMP-23 and BMP-24) or Tire Wash (BMP-36 and BMP-37) should be included in the contract. Street Sweeping and Vacuuming for Sediment Control is a secondary measure to remove residual sediment that was not removed by other measures. Well-maintained stabilized construction exits, vehicle tracking controls, and tire wash facilities can help reduce the necessary frequency of Street Sweeping and Vacuuming for Sediment Control.

#### *Common Failures or Misuses*

- Insufficient erosion controls in the contributing disturbed area.

### SPECIFICATIONS

#### Standard Specifications

- 656 Street Sweeping and Vacuuming for Sediment Control

## **BMP 56.00. Tackifier**

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### DESIGN CONSIDERATIONS

#### *Objectives*

Tackifiers are used as a bonding agent for soil, compost, seed, and/or mulch to aid in the stabilization process.

#### *Description*

Tackifiers can be either organic (derived from natural plant sources) or synthetic. Tackifiers are frequently pre-mixed with mulch fiber blends used in Hydraulic Erosion Control Products (HECPs).

#### *Applicability*

When used alone, Tackifiers can temporarily stabilize bare soils for short term erosion control. Tackifiers are most commonly used where temporary dust and erosion control is required. Hydraulically applied Tackifiers must be applied in conditions where they will cure or dry to be effective. Mulch may be used with Tackifiers to increase their functional longevity and assist in the application process by acting as a visual tracer during the spray installation.

Plant based Tackifiers may be used as stand-alone, temporary soil stabilization.

Chemical based Tackifiers may only be used in combination with sediment trapping measures down gradient of treated areas designed to retain sediment and potential chemicals that may be dislodged and become entrained in site runoff.

The functional longevity of Tackifiers will be dependent on climate and traffic impacts - foot, vehicle, and animal.

#### *Selection Considerations*

- Application rates and climate conditions will affect the functional longevity of all Tackifiers. Functional performance and longevity can be increased with the addition of mulch fiber. All applications must follow the manufacturer's specifications for application rates.
- Synthetic Tackifiers often include polyacrylamides (PAM) and designers must determine whether the synthetic Tackifier is anionic or nonionic. Cationic PAM in

Tackifiers is not permitted as it can be hazardous to aquatic life.

- Tackifiers containing PAM products will require documentation approving the products use by the U.S. Environmental Protection Agency (EPA) for potable water or by the states of California, Minnesota, Oregon, Washington, or Wisconsin for use in controlling erosion or sediment runoff from agricultural land or construction projects.
- The use of Tackifiers must strictly comply with the terms and conditions of the Alaska Construction General Permit (Alaska CGP). Tackifier use is limited to soil areas only and must meet the treatment chemical requirements for land applications contained in the Alaska CGP.
- When using chemical based tackifiers, typically PAM based, the CGP requires the following conditions.
  - Operators must provide notification on the Notification of Intent (NOI) or a modified NOI of their intention to use chemical treatment.
  - Site personnel must be trained in the proper handling and use of the specified chemical. Their names and titles must also be included in the site Storm Water Pollution Prevention Plan (SWPPP).
  - Proper site storage in leak proof containers under storm resistant covers surrounded by secondary containment will be necessary.
- While most Tackifiers are hydraulically applied, granular application can be performed; however, uniform application rates may be difficult to achieve.

#### *Design*

When Tackifiers are used as an interim, temporary control measure during construction, the ground must be reworked prior to applying seed and mulch. See BMP-58 Temporary Seeding and BMP-53 Permanent Seeding.

### *Relationship to Other Erosion and Sediment Control Measures*

Tackifiers can be applied alone or can be used to bond mulch fibers, such as straw or wood, to each other and the soil. Dyes or dyed mulch fiber may be used as a tracer or indicator to determine where Tackifiers have been applied and to ensure adequate coverage. Tackifiers may be applied over surface roughened (track walked) soils, stockpiles, compost, soil amendments, and other areas that will remain unworked and unstabilized for a limited period of time. Manufacturer's guidance must be consulted to determine the functional longevity of Tackifiers in various climatic conditions.

### *Common Failures or Misuses*

- Under-application (not enough Tackifier applied) and traffic across treated areas are the leading causes of failure of properly specified Tackifiers.
- Not all commercially available products will perform the same in all situations. Soils testing for product applicability may be necessary to ensure desired results.
- Weather will be the major contributor to Tackifier longevity. Precipitation, break-up, and freeze-thaw cycles will all contribute to the degradation of Tackifiers in the field

### SPECIFICATIONS

#### Standard Specification

- 657 Tackifier
- 752 Tackifier

# BMP 57.00. Temporary Seeding

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## DESIGN CONSIDERATIONS

### *Objectives*

Temporary Seeding is intended to temporarily stabilize the soil of a disturbed area to prevent the erosion and the discharge of soil and/or sediments.

Temporary Seeding is used in areas where permanent cover is not necessary or appropriate. By protecting bare soil from raindrop impact and binding the soil with roots, a well-established vegetative cover is one of the most effective methods of reducing erosion.

### *Other Names*

Temporary Stabilization.

### *Applicability*

Temporary Seeding is applicable to exposed areas subject to erosion that are not actively being worked. Temporary Seeding can be used where permanent covering is not necessary or where future ground disturbing activities will occur.

By itself, Temporary Seeding is not soil stabilization because the seeds are not effective until they sprout and create a stabilizing root mat. Temporary Seeding should be accompanied by surface preparation, surface roughening, fertilizer, mulch, and maintenance to encourage seed establishment. Temporary Seeding can remain and be left to winter over only if ground-disturbing activities are scheduled to resume the following spring. Prior to application of permanent stabilization measures, Temporary Seeding should be removed from, or plowed/tilled into, the existing soil

### *Selection Considerations*

- Consider application rate, regional climate, environment, and duration of required vegetation coverage prior to application. Temporary Seeding is intended to be used for a maximum of one growing season.
- Temporary Seeding should be applied soon after ground-disturbing activities cease in the area and in compliance with highway Section 641 (airport Section P-157). The use of fertilizers is advised to promote rapid and healthy seed growth. Fertilizer should be applied at the application

rate specified by the manufacturer or per the recommendations from a soil analysis

### *Design*

*Seed Selection:* Annual Ryegrass (*Lolium multiflorum*) should be used for short periods lasting no more than one growing season.

*Seed Application Rate:* Typical rate of 20 lbs/acre (per Plant Material Center recommendation), although the rate may be varied based on site-specific conditions.

*Fertilizer Application Rate:* Typical rate of 200 lbs/acre of 20-20-10 (percent nitrogen-phosphorus-potassium) fertilizer (per Plant Material Center recommendation).

*Other Soil Amendments:* In certain cases, in addition to fertilizer, specifying compost or topsoil may enhance vegetative growth. However, note that in some cases a layer of topsoil on gravel surfaces can increase erosion potential.

*Soil Stabilization Methods:* Hydraulic erosion control products (HECPs), including bonded fiber matrix, mulch, and tackifiers; and rolled erosion control products (RECPs) for slopes should be considered on a site-specific basis in conjunction with Temporary Seeding to decrease soil erosion potential

### *Relationship to Other Erosion and Sediment Control Measures*

Seeding should be performed in conjunction with surface roughening, soil stabilization methods, and grading practices. Concentrated flows or runoff should be directed away from the seeded areas using diversions.

### *Common Failures or Misuses*

Common failures are generally due to faulty installation and maintenance. These failures include:

- Ground or growth medium is insufficient to support seed.
- Seed is not applied at an adequate application rate.

- Mulch or HECP used is inadequate to hold seed on slopes.
- Seed is not applied uniformly and/or adequate ground coverage is not achieved.
- Seed is not properly or adequately irrigated.
- Seeded areas are disturbed by foot traffic and/or equipment after installation.
- Seeding is applied too close to freeze-up

### SPECIFICATIONS

#### Standard Specifications

- 658 – Temporary Seeding
- 620 – Topsoil
- 657 – Tackifier
- 650 – Compost Blanket
- 653 – Permanent Seeding
- 652 – Soil Amendments
- 753 – Soil Amendments
- 725 – Fertilizer
- 651– Hydraulic Erosion Control Products
- 751—Hydraulic Erosion Control Products
- 654– Rolled Erosion Control Products for Slopes
- 754-- Rolled Erosion Control Products



# Appendix C

Alaska DOT&PF SWPPP Guide

## Appendix C. DOT&PF SWPPP Forms

This is a listing of all forms currently associated with SWPPP documentation. The latest versions and updates can be found online at [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml).

<b>Form Number</b>	<b>Form Name</b>
25D-114	SWPPP Amendment Log
25D-111	SWPPP Contractor Certification
25D-109	SWPPP DOT&PF Certification
25D-100	SWPPP Construction Inspection Report Form
25D-115	SWPPP Daily Record of Rainfall
25D-113	SWPPP Delayed Action Item Report
25D-108	SWPPP Contractor Delegation of Signature for CGP Documents
25D-107	SWPPP DOT&PF Delegation of Signature for CGP Documents
25D-110	SWPPP Grading & Stabilization Activities Log
25D-112	SWPPP Corrective Action Log
25D-126	SWPPP Liquidated Damages Table
25D-127	SWPPP Project Staff Tracking
25D-106	SWPPP Preconstruction Site Visit
25D-105	SWPPP Subcontractor Certification
25D-125	SWPPP Training Log
25D-140	SWPPP Turbidity Monitoring Form
25D-141	SWPPP Turbidity Monitoring Annual Report Form
25D-129	SWPPP Visual Monitoring
25D-143	SWPPP CGP Noncompliance Notification Form

# Appendix D

Alaska DOT&PF SWPPP Guide

## **Appendix D. Endangered or Threatened Species, Critical Habitat, and Historic Landmark Contacts**

Regional Endangered Species Coordinator  
Region 7 – Alaska  
U.S. Fish and Wildlife Service  
Ecological Services  
1011 East Tudor Road  
Anchorage, AK. 99503

Juneau  
U.S. Fish and Wildlife Service  
Ecological Services  
3000 Vintage Blvd., Suite 201  
Juneau, AK. 99801-7100

Anchorage  
U.S. Fish and Wildlife Service  
Ecological Services  
4700 BLM Road  
Anchorage, AK. 99507

Fairbanks  
U.S. Fish and Wildlife Service  
Ecological Services  
101 12<sup>th</sup> Avenue, Room 110  
Fairbanks, AK. 99701

National Marine Fisheries Service  
Protected Resources Division  
222 W. 7<sup>th</sup> Avenue, #43  
Anchorage, AK 99513-7577

National Marine Fisheries Service  
Protected Resources Division  
PO Box 21668  
709 West 9<sup>th</sup> Street  
Juneau, AK 99802-1668

Office of History & Archaeology  
Department of Natural Resources  
State Historic Preservation Officer  
550 West 7th Ave., Suite 1310  
Anchorage AK 99501-3565

# Appendix E

Alaska DOT&PF SWPPP Guide

## Appendix E. Oil and Hazardous Materials Reporting Requirements

### Reporting and Documentation Procedure

In the event of a release of petroleum that reaches any surface waters, or a release on land of petroleum or certain hazardous substances (listed on the following pages) exceeding the Reportable Quantity (RQ) level, the Contractor must take the following steps:

1. Notify the Project Engineer.
2. Notify the Department of Environmental Conservation (DEC) at one of the following telephone numbers, depending on project location:
  - Central (Anchorage) 907-269-3063
  - Northern (Fairbanks) 907-451-2121
  - Southeast (Juneau) 907-465-5340
  - Outside normal business hours, call: 1-800-478-9300

During telephone notification to ADEC, they will assist you in completing an Oil and Hazardous Substances Spill Notification Form. Submit the completed form to DEC after telephone notification (a copy of the form appears on page E-4 below).

3. Notify the National Response Center in Washington, D.C., immediately at 800-424-8802 or 202-267-2675 if you do not have 800 access. There is also an online reporting tool available at <http://www.nrc.uscg.mil/nrchp.html>
4. Initiate a corrective action within 24 hours with a complete-by-date as soon as possible, and document the required information in the Corrective Action Log.
5. If identified outside of an inspection, add the corrective action to the next inspection report.
6. Update the SWPPP describing the release, all actions taken and any revisions made to the SWPPP. Attach the DEC Spill Notification form into Appendix O of the SWPPP and document the addition in the SWPPP Amendment Log. Attach any photos, emails, and supplementary documentation to the following inspection report and into Appendix O of the SWPPP.
7. Within 14 days, submit a written description of the release to the Environmental Protection Agency (EPA) regional office providing the date and circumstances of the release and the steps to be taken to prevent another release.

U.S. Environmental Protection Agency  
1200 Sixth Avenue  
Seattle, WA 98101

*Note:* "oil" means oil of any kind and in any form, whether crude, refined, or a petroleum by-product, including but not limited to petroleum, fuel oil, gasoline, lubricating oils, oily sludge, oil refuse, oil mixed with other wastes, crude oils, liquefied natural gas, propane, butane, or other liquid hydrocarbons regardless of specific gravity.

### FORMS

Alaska state law requires all oil and hazardous substance releases to be reported to DEC. The following forms are used to document information required by State Regulation 18 AAC 75.300(e).

# IT'S THE LAW!

AS 46.03.755 and 18 AAC 75.300

## REPORT OIL AND HAZARDOUS SUBSTANCE SPILLS

### During Normal Business Hours

call the nearest response team office:

**Central Alaska:** (907) 269-3063  
Anchorage Fax: (907) 269-7648

**Northern Alaska:** (907) 451-2121  
Fairbanks Fax: (907) 451-2362

**Southeast Alaska:** (907) 465-5340  
Juneau Fax: (907) 465-5245

**Alaska Pipeline:** (907) 451-2121  
Fairbanks Fax: (907) 451-2362

### Outside Normal Business Hours

**Toll Free** 1-800-478-9300

**International** 1-907-269-0667



Alaska Department of  
Environmental Conservation  
Division of Spill Prevention and Response  
[www.dec.alaska.gov/spar/spillreport.htm](http://www.dec.alaska.gov/spar/spillreport.htm)

### Hazardous Substance

Any hazardous substance spill, other than oil, must be reported immediately.

### Oil - Petroleum Products

#### To Water

◆ Any amount spilled to water must be reported immediately.

#### To Land

- ◆ Spills in excess of 55 gallons must be reported immediately.
- ◆ Spills in excess of 10 gallons, but 55 gallons or less, must be reported within 48 hours after the person has knowledge of the spill.
- ◆ Spills of 1 to 10 gallons must be recorded in a spill reporting log submitted to ADEC each month.

#### To Impermeable Secondary Containment Areas

◆ Any spills in excess of 55 gallons must be reported within 48 hours.

### Additional Requirements for Regulated Underground Storage Tank Facilities

Regulated Underground Storage Tank (UST) facilities are defined at 18 AAC 78.005 and do not include heating oil tanks.

If your release detection system indicates a possible discharge, or if you notice unusual operating conditions that might indicate a release, you must notify the ADEC UST Program within 7 days.

UST Program: (907) 269-3055 or 269-7679

rev. Oct/2015

Found on the DEC webpage: <http://dec.alaska.gov/spar/spillreport.htm>







ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
**OIL & HAZARDOUS SUBSTANCES SPILL NOTIFICATION FORM**

ADEC USE ONLY

ADEC SPILL #:		ADEC FILE #:		ADEC LC:	
PERSON REPORTING:		PHONE NUMBER:		REPORTED HOW? (ADEC USE ONLY) <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> PERS <input type="checkbox"/> E-mail	
DATE/TIME OF SPILL:		DATE/TIME DISCOVERED:		DATE/TIME REPORTED TO ADEC:	
INCIDENT LOCATION/ADDRESS:		DATUM: <input type="checkbox"/> NAD27 <input type="checkbox"/> NAD83 <input type="checkbox"/> WGS84 <input type="checkbox"/> Other _____		PRODUCT SPILLED:	
		LAT.			
		LONG.			
QUANTITY SPILLED:	QUANTITY CONTAINED:	QUANTITY RECOVERED:	QUANTITY DISPOSED:		
<input type="checkbox"/> gallons <input type="checkbox"/> pounds	<input type="checkbox"/> gallons <input type="checkbox"/> pounds	<input type="checkbox"/> gallons <input type="checkbox"/> pounds	<input type="checkbox"/> gallons <input type="checkbox"/> pounds		
POTENTIAL RESPONSIBLE PARTY:			OTHER PRP, IF ANY:		VESSEL NAME:
Name/Business:					VESSEL NUMBER:
Mailing Address:					
Contact Name:					> 400 GROSS TON VESSEL:
Contact Number:					<input type="checkbox"/> Yes <input type="checkbox"/> No
SOURCE OF SPILL:					CAUSE CLASSIFICATION:
CAUSE OF SPILL:					<input type="checkbox"/> Accident <input type="checkbox"/> Human Factors <input type="checkbox"/> Structural/Mechanical <input type="checkbox"/> Other
					<input type="checkbox"/> Under Investigation
CLEANUP ACTIONS:					
DISPOSAL METHODS AND LOCATION:					
AFFECTED AREA SIZE:	SURFACE TYPE: <i>(gravel, asphalt, name of river etc.)</i>		RESOURCES AFFECTED/THREATENED: <i>(Water sources, wildlife, wells, etc.)</i>		
COMMENTS:					

ADEC USE ONLY

SPILL NAME:		NAME OF DEC STAFF RESPONDING:		C-PLAN MGR NOTIFIED? <input type="checkbox"/> Yes <input type="checkbox"/> No	
DEC RESPONSE: <input type="checkbox"/> Phone follow-up <input type="checkbox"/> Field visit <input type="checkbox"/> Took Report		CASELOAD CODE: <input type="checkbox"/> First and Final <input type="checkbox"/> Open/No LC <input type="checkbox"/> LC Assigned		CLEANUP CLOSURE ACTION: <input type="checkbox"/> NFA <input type="checkbox"/> Monitoring <input type="checkbox"/> Transferred to CS or STP	
COMMENTS:		Status of Case: <input type="checkbox"/> Open <input type="checkbox"/> Closed		DATE CASE CLOSED:	
REPORT PREPARED BY:					
				DATE:	

Revised 6/16/2014

Found on the DEC webpage: <http://dec.alaska.gov/spar/spillreport.htm>



## OIL & HAZARDOUS MATERIALS INCIDENT FINAL REPORT

The following written report is required by State regulations 18 AAC 75.300(e), following departmental notification of a discharge of oil and hazardous materials. The report is due within 15 days after the cleanup is completed, or if no cleanup occurs, within 15 days after the discharge. Forward the report to the nearest DEC office of the department. The report must contain, as applicable:

1. Date and time of the discharge:	
2. Location of the discharge:	
3. Name of the site, facility or operation:	
4. Name, mailing address, and telephone number of:	
A. Person or persons causing or responsible for the discharge:	B. Owner and operator of the site, facility or operation:
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
5. Type and amount of each oil or hazardous substance discharged:	
6. Cause of the discharge:	
7. Description of any environmental damage caused by the discharge or containment, to the extent the damage can be identified:	

Found on the DEC webpage: <http://dec.alaska.gov/spar/spillreport.htm>

<b>8. Description of cleanup actions taken:</b>	
<b>9. Estimated amount of:</b> (A) oil or hazardous substance cleaned up:	(B) oily or hazardous waste generated:
<b>10. Date, location, and method of ultimate disposal of the oil, hazardous substance and any contaminated materials, including cleanup materials:</b>	
<b>11. Description of actions being taken to prevent recurrence of the discharge:</b>	
<b>12. Other information the department requires to fully assess the cause and impact of the discharge (receipts for disposal if available):</b>	
<b>Signature</b>	<b>Printed name</b>
<b>Date</b>	<b>Title</b>

**MAIL OR FAX TO the Closest A.D.E.C. Office below**

**Anchorage**  
 Phone: 269-3063  
 Fax: 269-7648  
 555 Cordova Street  
 Anchorage, AK 99501

**Fairbanks**  
 Phone: 451-2121  
 Fax: 451-2362  
 810 University Ave.  
 Fairbanks, AK 99709-3643

**Juneau**  
 Phone: 465-5340  
 Fax: 465-2237  
 410 Willoughby Ave., Suite 309  
 Juneau, AK 99801-1795

DEC USE ONLY	
ADEC Project Manager:	ADEC Spill #:

Found on the DEC webpage: <http://dec.alaska.gov/spar/spillreport.htm>

**Table 117.3**  
**Reportable Quantities of Hazardous Substances Designated Pursuant to**  
**Section 311**  
**of the Clean Water Act**

Material	Category	RQ in pounds (kilograms)
Acetaldehyde	C	1,000 (454)
Acetic acid	D	5,000 (2,270)
Acetic anhydride	D	5,000 (2,270)
Acetone cyanohydrin	A	10 (4.54)
Acetyl bromide	D	5,000 (2,270)
Acetyl chloride	D	5,000 (2,270)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Adipic acid	D	5,000 (2,270)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Allyl chloride	C	1,000 (454)
Aluminum sulfate	D	5,000 (2,270)
Ammonia	B	100 (45.4)
Ammonium acetate	D	5,000 (2,270)
Ammonium benzoate	D	5,000 (2,270)
Ammonium bicarbonate	D	5,000 (2,270)
Ammonium bichromate	A	10 (4.54)
Ammonium bifluoride	B	100 (45.4)
Ammonium bisulfite	D	5,000 (2,270)
Ammonium carbamate	D	5,000 (2,270)
Ammonium carbonate	D	5,000 (2,270)
Ammonium chloride	D	5,000 (2,270)
Ammonium chromate	A	10 (4.54)
Ammonium citrate dibasic	D	5,000 (2,270)
Ammonium fluoborate	D	5,000 (2,270)
Ammonium fluoride	B	100 (45.4)
Ammonium hydroxide	C	1,000 (454)
Ammonium oxalate	D	5,000 (2,270)
Ammonium silicofluoride	C	1,000 (454)
Ammonium sulfamate	D	5,000 (2,270)
Ammonium sulfide	B	100 (45.4)
Ammonium sulfite	D	5,000 (2,270)
Ammonium tartrate	D	5,000 (2,270)
Ammonium thiocyanate	D	5,000 (2,270)
Amyl acetate	D	5,000 (2,270)
Aniline	D	5,000 (2,270)
Antimony pentachloride	C	1,000 (454)
Antimony potassium tartrate	B	100 (45.4)
Antimony tribromide	C	1,000 (454)
Antimony trichloride	C	1,000 (454)
Antimony trifluoride	C	1,000 (454)
Antimony trioxide	C	1,000 (454)
Arsenic disulfide	X	1 (0.454)
Arsenic pentoxide	X	1 (0.454)
Arsenic trichloride	X	1 (0.454)

<b>Material</b>	<b>Category</b>	<b>RQ in pounds (kilograms)</b>
Arsenic trioxide	X	1 (0.454)
Arsenic trisulfide	X	1 (0.454)
Barium cyanide	A	10 (4.54)
Benzene	A	10 (4.54)
Benzoic acid	D	5,000 (2,270)
Benzonitrile	D	5,000 (2,270)
Benzoyl chloride	C	1,000 (454)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	X	1 (0.454)
Beryllium fluoride	X	1 (0.454)
Beryllium nitrate	X	1 (0.454)
Butyl acetate	D	5,000 (2,270)
Butylamine	C	1,000 (454)
n-Butyl phthalate	A	10 (4.54)
Butyric acid	D	5,000 (2,270)
Cadmium acetate	A	10 (4.54)
Cadmium bromide	A	10 (4.54)
Cadmium chloride	A	10 (4.54)
Calcium arsenate	X	1 (0.454)
Calcium arsenite	X	1 (0.454)
Calcium carbide	A	10 (4.54)
Calcium chromate	A	10 (4.54)
Calcium cyanide	A	10 (4.54)
Calcium dodecylbenzenesulfonate	C	1,000 (454)
Calcium hypochlorite	A	10 (4.54)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	B	100 (45.4)
Carbon tetrachloride	A	10 (4.54)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	A	10 (4.54)
Chlorosulfonic acid	C	1,000 (454)
Chlorpyrifos	X	1 (0.454)
Chromic acetate	C	1,000 (454)
Chromic acid	A	10 (4.54)
Chromic sulfate	C	1,000 (454)
Chromous chloride	C	1,000 (454)
Cobaltous bromide	C	1,000 (454)
Cobaltous formate	C	1,000 (454)
Cobaltous sulfamate	C	1,000 (454)
Coumaphos	A	10 (4.54)
Cresol	B	100 (45.4)
Crotonaldehyde	B	100 (45.4)
Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	X	1 (0.454)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)

<b>Material</b>	<b>Category</b>	<b>RQ in pounds (kilograms)</b>
Cupric sulfate	A	10 (4.54)
Cupric sulfate, ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
Cyclohexane	C	1,000 (454)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dicamba	C	1,000 (454)
Dichlobenil	B	100 (45.4)
Dichlone	X	1 (0.454)
Dichlorobenzene	B	100 (45.4)
Dichloropropane	C	1,000 (454)
Dichloropropene	B	100 (45.4)
Dichloropropene-	B	100 (45.4)
Dichloropropane (mixture)		
2,2-Dichloropropionic acid	D	5,000 (2,270)
Dichlorvos	A	10 (4.54)
Dicofol	A	10 (4.54)
Dieldrin	X	1 (0.454)
Diethylamine	B	100 (45.4)
Dimethylamine	C	1,000 (454)
Dinitrobenzene (mixed)	B	100 (45.4)
Dinitrophenol	A	10 (45.4)
Dinitrotoluene	A	10 (4.54)
Diquat	C	1,000 (454)
Disulfoton	X	1 (0.454)
Diuron	B	100 (45.4)
Dodecylbenzenesulfonic acid	C	1,000 (454)
Endosulfan	X	1 (0.454)
Endrin	X	1 (0.454)
Epichlorohydrin	B	100 (45.4)
Ethion	A	10 (4.54)
Ethylbenzene	C	1,000 (454)
Ethylenediamine	D	5,000 (2,270)
Ethylenediamine-tetraacetic acid (EDTA)	D	5,000 (2,270)
Ethylene dibromide	X	1 (0.454)
Ethylene dichloride	B	100 (45.4)
Ferric ammonium citrate	C	1,000 (454)
Ferric ammonium oxalate	C	1,000 (454)
Ferric chloride	C	1,000 (454)
Ferric fluoride	B	100 (45.4)
Ferric nitrate	C	1,000 (454)
Ferric sulfate	C	1,000 (454)
Ferrous ammonium sulfate	C	1,000 (454)
Ferrous chloride	B	100 (45.4)
Ferrous sulfate	C	1,000 (454)
Formaldehyde	B	100 (45.4)

<b>Material</b>	<b>Category</b>	<b>RQ in pounds (kilograms)</b>
Formic acid	D	5,000 (2,270)
Fumaric acid	D	5,000 (2,270)
Furfural	D	5,000 (2,270)
Guthion	X	1 (0.454)
Heptachlor	X	1 (0.454)
Hexachlorocyclopentadiene	A	10 (4.54)
Hydrochloric acid	D	5,000 (2,270)
Hydrofluoric acid	B	100 (45.4)
Hydrogen cyanide	A	10 (4.54)
Hydrogen sulfide	B	100 (45.4)
Isoprene	B	100 (45.4)
Isopropanolamine dodecylbenzenesulfonate	C	1,000 (454)
Kepone	X	1 (0.454)
Lead acetate	A	10 (4.54)
Lead arsenate	X	1 (0.454)
Lead chloride	A	10 (4.54)
Lead fluoborate	A	10 (4.54)
Lead fluoride	A	10 (4.54)
Lead iodide	A	10 (4.54)
Lead nitrate	A	10 (4.54)
Lead stearate	A	10 (4.54)
Lead sulfate	A	10 (4.54)
Lead sulfide	A	10 (4.54)
Lead thiocyanate	A	10 (4.54)
Lindane	X	1 (0.454)
Lithium chromate	A	10 (4.54)
Malathion	B	100 (45.4)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethur	A	10 (4.54)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl methacrylate	C	1,000 (454)
Methyl parathion	B	100 (45.4)
Mevinphos	A	10 (4.54)
Mexacarbate	C	1,000 (454)
Monoethylamine	B	100 (45.4)
Monomethylamine	B	100 (45.4)
Naled	A	10 (4.54)
Naphthalene	B	100 (45.4)
Naphthenic acid	B	100 (45.4)

<b>Material</b>	<b>Category</b>	<b>RQ in pounds (kilograms)</b>
Nickel ammonium sulfate	B	100 (45.4)
Nickel chloride	B	100 (45.4)
Nickel hydroxide	A	10 (4.54)
Nickel nitrate	B	100 (45.4)
Nickel sulfate	B	100 (45.4)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)
Nitrogen dioxide	A	10 (4.54)
Nitrophenol (mixed)	B	100 (45.4)
Nitrotoluene	C	1,000 (454)
Paraformaldehyde	C	1,000 (454)
Parathion	A	10 (4.54)
Pentachlorophenol	A	10 (4.54)
Phenol	C	1,000 (454)
Phosgene	A	10 (4.54)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0.454)
Phosphorus oxychloride	C	1,000 (454)
Phosphorus pentasulfide	B	100 (45.4)
Phosphorus trichloride	C	1,000 (454)
Polychlorinated biphenyls	X	1 (0.454)
Potassium arsenate	X	1 (0.454)
Potassium arsenite	X	1 (0.454)
Potassium bichromate	A	10 (4.54)
Potassium chromate	A	10 (4.54)
Potassium cyanide	A	10 (4.54)
Potassium hydroxide	C	1,000 (454)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propionic Acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	B	100 (45.4)
Pyrethrins	X	1 (0.454)
Quinoline	D	5,000 (2,270)
Resorcinol	D	5,000 (2,270)
Selenium oxide	A	10 (4.54)
Silver nitrate	X	1 (0.454)
Sodium	A	10 (4.54)
Sodium arsenate	X	1 (0.454)
Sodium arsenite	X	1 (0.454)
Sodium bichromate	A	10 (4.54)
Sodium bifluoride	B	100 (45.4)
Sodium bisulfite	D	5,000 (2,270)
Sodium chromate	A	10 (4.54)
Sodium cyanide	A	10 (4.54)
Sodium dodecylbenzenesulfonate	C	1,000 (454)
Sodium fluoride	C	1,000 (454)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)



<b>Material</b>	<b>Category</b>	<b>RQ in pounds (kilograms)</b>
Sodium hypochlorite	B	100 (45.4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45.4)
Sodium phosphate, dibasic	D	5,000 (2,270)
Sodium phosphate, tribasic	D	5,000 (2,270)
Sodium selenite	B	100 (45.4)
Strontium chromate	A	10 (4.54)
Strychnine	A	10 (4.54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	C	1,000 (454)
2,4,5-T amines	D	5,000 (2,270)
2,4,5-T esters	C	1,000 (454)
2,4,5-T salts	C	1,000 (454)
TDE	X	1 (0.454)
2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)
Tetraethyl lead	A	10 (4.54)
Tetraethyl pyrophosphate	A	10 (4.54)
Thallium sulfate	B	100 (45.4)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0.454)
Trichlorfon	B	100 (45.4)
Trichloroethylene	B	100 (45.4)
Trichlorophenol	A	10 (4.54)
Triethanolamine	C	1,000 (454)
dodecylbenzenesulfonate		
Triethylamine	D	5,000 (2,270)
Trimethylamine	B	100 (45.4)
Uranyl acetate	B	100 (45.4)
Uranyl nitrate	B	100 (45.4)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	D	5,000 (2,270)
Vinylidene chloride	B	100 (45.4)
Xylene (mixed)	B	100 (45.4)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	C	1,000 (454)
Zinc borate	C	1,000 (454)
Zinc bromide	C	1,000 (454)
Zinc carbonate	C	1,000 (454)
Zinc chloride	C	1,000 (454)
Zinc cyanide	A	10 (4.54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	C	1,000 (454)

<b>Material</b>	<b>Category</b>	<b>RQ in pounds (kilograms)</b>
Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	B	100 (45.4)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	C	1,000 (454)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	D	5,000 (2,270)

[50 FR 13513, Apr. 4, 1985, as amended at 51 FR 34547, Sept. 29, 1986; 54 FR 33482, Aug. 14, 1989; 58 FR 35327, June 30, 1993; 60 FR 30937, June 12, 1995]

# Appendix F

Alaska DOT&PF SWPPP Guide

## Appendix F. Web Links for SWPPP Resources

### Alaska Endangered Species Information

- <http://alaska.fws.gov/fisheries/endangered/index.htm>

### Construction Industry Compliance Assistance Center

- <http://www.CICAcenter.org/bmps.html>

### DEC Alaska Storm Water Guide

- <http://www.dec.state.ak.us/water/wnpssc/stormwater/index.htm>

### EPA SWPPP template

- <http://www.epa.gov/npdes/swpppguide>

### EPA SWPPP Guide

- <http://www.epa.gov/npdes/swpppguide>

### Erosion Control Technology Council

- <http://www.ectc.org/index.asp>

### International Erosion Control Association

- <http://www.ieca.org/Resources/Resources.asp>

### National Marine Fisheries Service (NMFS)

- <http://www.fakr.noaa.gov/protectedresources/default.htm>

### *National Menu of Storm Water Best Management Practices*

- <http://www.epa.gov/npdes/stormwater/menuofbmps>

### Notice of Intent (eNOI) form

- <http://www.dec.state.ak.us/water/wnpssc/stormwater/APDESeNOI.html>

### A Revegetation Manual for Alaska

- <http://www.plants.alaska.gov/>

### Storm Water General Permit for Large and Small Construction Activities

- <http://www.dec.state.ak.us/water/wnpssc/stormwater/Index.htm>

### SWPPP Related Forms

- [http://www.dot.state.ak.us/stwddes/dcsconst/pop\\_constforms.shtml](http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml)

### U.S. Fish and Wildlife Service (USFWS)

- <http://endangered.fws.gov>