

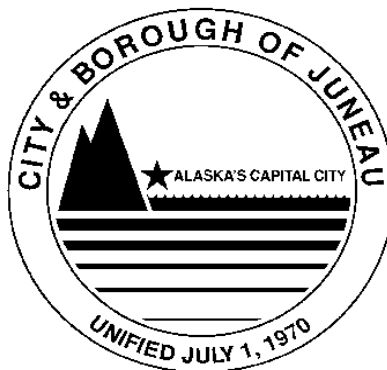
JNU RUNWAY SAFETY AREA IMPROVEMENTS, PHASE 2B

VOLUME II OF III APPENDICES

Contract No. BE17-045

AIP No. 3-02-0133-xxx-2016

File No. 1603



ENGINEERING DEPARTMENT

APPENDIX A

Erosion and Sediment Control Plan

Erosion and Sediment Control Plan
For
Juneau International Airport
Runway Safety Area Improvements – Phase 2B

City and Borough of Juneau Contract No. BE-17-045
Airport Improvement Program No. 3-02-0133-XXX-2016

Juneau, Alaska

Prepared For:

Juneau International Airport
City and Borough of Juneau
1873 Shell Simmons Drive, Suite 200
Juneau, Alaska 99801

Prepared By: Ryan Kim

Company Name: DOWL

ESCP Preparation Date: July 2016

The following Erosion and Sediment Control Plan (ESCP) has been prepared by the City and Borough of Juneau (CBJ) to assist bidders in successfully planning their construction means and methods to comply with the 2016 Alaska Construction General Permit (ACGP), United States Army Corps of Engineers (USACE) 404/10 Permit, Alaska Department of Environmental Conservation (ADEC) 401 Water Quality Certification, Alaska Department of Fish and Game (ADF&G) Title 16, and other permits associated with this project. This document is not intended to be all inclusive of the best management practices (BMP's) that will be required to reduce the potential for sediment discharge during construction and comply with permit conditions or construction specifications. This ESCP is intended to guide contractors during the bidding process and assist in the preparation of the contractor's Storm Water Pollution Prevention Plan (SWPPP) that must be approved prior to commencing construction after award. The contractor is responsible for the risk assessment analysis, planning, preparation and implementation of the SWPPP.

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APPENDICES

Appendices that are marked with **(ESCP)** are to be filled out by the Design. All other appendices are to be filled out by the SWPPP preparer and will not be included in the ESCP.

Appendix A	Site Maps and Drawings (ESCP)
Appendix B	BMP Details (ESCP)
Appendix C	Project Schedule
Appendix D	Supporting Documentation: (ESCP) <ul style="list-style-type: none">• TMDLs• Endangered Species• Historic Properties• ADEC Non-Domestic Wastewater Plan Review Non-Objection Letter (if required)• ADEC Dewatering Permit (if required)• Environmental Permits and Commitments• Other Permits or Requirements
Appendix E	Delegation of Authority, Subcontractor Certifications (25D-105), Project Staff Tracking and Personnel Qualifications
Appendix F	Permit Conditions: <ul style="list-style-type: none">• Copy of Signed Notice of Intent• Confirmation of Delivery of NOIs to ADEC• Copy of Letters from ADEC Authorizing Coverage, with ADEC NOI Tracking Number• Copy of 2016 Alaska Construction General Permit
Appendix G	Grading and Stabilization Records
Appendix H	Monitoring Plan (If Applicable) and Reports
Appendix I	Training Records
Appendix J	Corrective Action Log and Delayed Action Item Reports
Appendix K	Inspection Records
Appendix L	SWPPP Pre-construction Site Visit
Appendix M	SWPPP Amendment Log
Appendix N	Daily Record of Rainfall
Appendix O	Hazardous Materials Control Plan
Appendix P	Treatment Chemical/Active Treatment Systems (if applicable)
Appendix Q	Other <ul style="list-style-type: none">• Anti-Degradation Analysis (if applicable)• Correspondence with Regulatory Agencies• Notices of Termination

1.0 PERMITTEE (5.3.1)

The City and Borough of Juneau (CBJ) will be a permittee for the project. Upon the approval of the contractor's Storm Water Pollution Prevention Plan (SWPPP) by CBJ, the contractor will be required to submit a Notice of Intent (NOI) and obtain permit coverage as an operator. The contractor's contact information as well as contact information for all subcontractors must be included in the contractor's SWPPP. All subcontractors will be required to sign a certification that they have read the Alaska Construction General Permit (ACGP) and the contractor's SWPPP and will adhere to their terms and conditions.

1.1 Operator(s)/Contractor(s)

Operator Information			
Organization: Enter Text		Name: Enter Text	
Title: Enter Text			
Phone: Enter Text		Fax (optional): Enter Text	Email: Enter Text
Mailing Address:	Street (PO Box): Enter Text		
	City: Enter Text	State: Enter Text	Zip: Enter Text
Area of Control	Day-to-day operational control of those activities at a site which are necessary to ensure compliance with a SWPPP or other permit conditions.		

The contractor has day-to-day operational control over activities in the field, including subcontractors, installing, maintaining, and inspecting all erosion and sediment controls and implementation of the SWPPP.

Repeat as necessary.

Owner Information			
Organization: City and Borough of Juneau (CBJ) – Juneau International Airport		Name: Enter Text	
Title: Enter Text			
Phone: Enter Text		Fax (optional): Enter Text	Email: Enter Text
Mailing Address:	Street (PO Box): 1873 Shell Simmons Dr., Suite 200		
	City: Juneau	State: Alaska	Zip: 99801
Area of Control	Operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications.		

1.2 Subcontractors

Subcontractor Information			
Organization: Enter Text	Name: Enter Text	Title: Enter Text	
Phone: Enter Text	Fax (optional): Enter Text	Email: Enter Text	
Mailing Address:	Street (PO Box): Enter Text		
	City: Enter Text	State: Enter Text	Zip: Enter Text
Area of Control	Insert Area of Control (if more than one operator at site)		

Repeat as necessary to include all subcontractors.

2.0 STORM WATER CONTACTS (5.3.2)

Identify the qualified persons responsible for the following required positions (note: a small project may have all these responsibilities carried out by one person):

Superintendent; CBJ's Project Engineer; Storm Water Lead (5.3.2); SWPPP Preparer (5.3.2.2); Person(s) Conducting Inspections- Contractor's SWPPP Manager and CBJ's Storm Water Inspector (5.3.2.3); Person(s) Conducting Monitoring (if applicable, 5.3.2.4), and Person(s) Operating Active Treatment System (if applicable, 5.3.2.5).

Document that the named individuals are Qualified Persons as described in ACGP Appendix C. Include documentation of qualifications in Appendix E of the SWPPP.

<u>Qualified Personnel</u>	<u>Responsibility</u>
<p>Contractor's Superintendent Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	<p>The Contractor's duly authorized representative in responsible charge of the work. Authority for the overall operation of the Project and for Contractor furnished sites and facilities directly related to the Project.</p>
<p>CBJ's Project Engineer Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	
<p>Storm Water Lead (SWPPP Manager) Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	<p>Authority to stop and/or modify construction activities as necessary to comply with the SWPPP and the terms and conditions of the permit.</p>
<p>SWPPP Preparer Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	<p>Possess the skills to assess conditions at the construction site that could impact storm water quality. Familiar with Part 5 as a means to implement the permit.</p>
<p>Contractor's Storm Water Inspector Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	<p>Assess conditions at the construction site that could impact storm water quality. Assess the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharge, and familiar with Part 6 as a means to ensure compliance with the permit.</p>

<p>CBJ's Storm Water Inspector</p> <p>Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	<p>Assess conditions at the construction site that could impact storm water quality. Assess the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharge, and familiar with Part 6 as a means to ensure compliance with the permit.</p>
<p>Monitoring Person (If Applicable)</p> <p>Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	<p>Knowledgeable in the principles and practices of water quality monitoring who is familiar with Part 7 and the monitoring plan for the site and how to conduct water quality sampling, testing, and reporting.</p>
<p>Active Treatment System Operator (If Applicable)</p> <p>Company Name Address City, State, Zip Code Telephone # Fax/Email</p>	<p>Knowledgeable in the principles and practices of treatment systems that employs chemical coagulation, chemical flocculation or electrocoagulation to aid in the treatment of storm water runoff. Familiar with Part 4.5 as a means to implement and comply with the permit.</p>

The Contractor shall include a SWPPP Project Staff Tracking log in Appendix E to document any changes in personnel for the positions of Superintendent, Project Engineer, SWPPP Manager, and Inspectors.

3.0 PROJECT INFORMATION (5.3.3)

3.1 Project Information

Project Name: Juneau International Airport Runway Safety Area Improvements – Phase 2B			
Location Address:	Street/Location: Juneau International Airport		Borough or similar government subdivision: City and Borough of Juneau
	City: Juneau		State: Alaska
			Zip: 99801
	Latitude (decimal degree, 5 places): 58.35472° N		Longitude (decimal degree, 5 places): 134.57611° W
Determined By: <input type="checkbox"/> GPS <input type="checkbox"/> Web Map: <input checked="" type="checkbox"/> USGS Topo Map, Scale: 1:1 <input type="checkbox"/> Other:			

3.2 Project Site-Specific Conditions (5.3.3)

The Juneau International Airport (JNU) is located on the panhandle in southeast Alaska approximately 950 air miles northwest of Seattle and 570 air miles southeast of Anchorage. The JNU is a Class I, small hub primary airport with a single paved runway that is 150 feet wide and 8,857 feet long, aligned in an almost east-west direction. The runway lies parallel to a seaplane base 4,800 feet long and 400 feet wide for water takeoffs and landings.

Mean annual precipitation based on nearest weather stations (inches):

Juneau International Airport, Alaska (504100) weather station has an average annual rainfall of **57.68 inches**.

JUNEAU INTL AP, ALASKA (504100)

Period of Record Monthly Climate Summary

Period of Record : 09/01/1936 to 01/20/2015

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	30.0	34.4	38.5	47.6	55.5	61.7	63.9	62.6	55.8	47.0	37.5	32.8	47.3
Average Min. Temperature (F)	19.7	23.3	26.4	32.2	39.3	45.5	48.6	47.8	43.3	37.0	28.3	23.8	34.6
Average Total Precipitation (in.)	4.50	3.93	3.47	2.88	3.43	3.16	4.41	5.49	7.58	8.02	5.61	5.21	57.68
Average Total SnowFall (in.)	26.8	18.5	14.8	2.6	0.0	0.0	0.0	0.0	0.0	1.1	12.4	20.9	97.1
Average Snow Depth (in.)	6	6	3	0	0	0	0	0	0	0	1	4	2

Percent of possible observations for period of record.

Max. Temp.: 97.8% Min. Temp.: 97.8% Precipitation: 97.8% Snowfall: 96.4% Snow Depth: 95.4%

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center, wrc@dr.edu

Figure 1: Juneau International Airport – Period of Record Monthly Climate Summary Table

Source: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ak4100>

Size of the 2-yr, 24-hr storm event (in inches):

According to the National Oceanic and Atmospheric Administration's (NOAA) Precipitation Frequency Atlas, the 2-year, 24-hour storm event is **2.40 inches** for the closest NOAA recognized weather station; Juneau International Airport, Alaska (504100).

Source: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_ak.html

Soil Type(s) and Slopes:

Based upon the geotechnical investigation of the subsurface conditions detailed in the *Final Subsurface Exploration and Preliminary Foundation Recommendations Juneau International Airport Improvements* (DOWL 2008), the following information was obtained:

- **Northwest Development Area (NWDA):** Soils in the NWDA are silt, poorly graded gravel with sand, silt with sand, and poorly graded gravel with sand. In boring locations where groundwater was observed, the average depth to groundwater ranged from 4.5 feet to 5.5 feet below the existing ground surface.
- **Northeast Development Area (NEDA):** Soils in the NEDA are sandy silt, poorly graded sand, poorly graded sand with silt, poorly graded sand with silt and gravel, silty sand, silty sand with gravel, poorly graded sand with gravel, and poorly graded gravel with sand. In boring locations where groundwater was observed, the average depth to groundwater ranged from 4 feet to 5.5 feet below the existing ground surface.

Landscape Topography:

The terrain for the proposed project areas are relatively flat or gently sloping lowlands.

Drainage patterns:

Stormwater sheet flow from the proposed project areas is channelized into existing channels and culverts to ultimately runoff into the Mendenhall River and the Mendenhall Wetlands – State Game Refuge. All planned drainage improvements are designed to keep runoff from the airport out of Duck Creek and Jordan Creek. Areas will be graded to promote drainage away from these creeks and route the runoff to a series of ditches and storm drains.

Type of Existing Vegetation:

Vegetation surrounding the project areas is composed of grass and small shrubs.

Approximate growing season:

The growing season for the Coastal Western Hemlock – Sitka Spruce Forests ecoregion is approximated to be **April 29 to September 28**, according to the US Army Corps of Engineer's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region*, dated around the end of April. The first hard freeze, which can end the growing season for most plants, is expected to take place near the end of September.

Source: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/erdc-el_tr-07-24.pdf

Seeding Dates:

As referenced in Section 901 of the project's specifications and special provisions, the application of hydraulically applied seed in disturbed areas is to take place after the permanent cessation of ground-disturbing activities. Seeding shall be done within the time period specified in Section 4.5.1 of the 2016 ACGP and Section 157 of the project specifications. Seeding shall be performed between **May 15 and August 15**; written approval from the Engineer must be obtained for any seeding that takes place outside of the specified timeframe.

Clearing Window/Time Period to Perform Vegetation Clearing:

Utilizing the U.S. Fish & Wildlife Service's (USFWS) *Construction Advisory for Protecting Migratory Birds/Land Clearing Guidance for Alaska* document, the clearing window for forest, woodland, shrub, open habitats located in the Southeast Region is from **July 16 to April 14**. Any clearing for this project will take place between those dates, and shall be in accordance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. > 703, to avoid impact to nesting migratory birds. For purposes of complying with the MBTA, tree and brush clearing on frozen ground is permitted prior to obtaining an NOI so long as the clearing operations do not disturb the vegetative mat; however, no grubbing activities are permitted until

an NOI is required. Written approval from the Engineer must be obtained for any clearing operations that take place outside of the specified timeframe.

Source: http://alaska.fws.gov/fisheries/fieldoffice/anchorage/pdf/vegetation_clearing.pdf

Fish Window:

In-water work is not anticipated to take place within any of the proposed project areas. The fish window does not apply.

Historic site contamination evident from existing site features and known past usage of the site:

A search of the Alaska Department of Conservation (DEC) Contaminated Site Database indicates there are six reported spills or leaked underground storage tanks (LUST) within a 1,500-foot radius of the proposed project areas.

- The Northwest Development Area (NWDA) consistent of three active and two cleanup complete – institutional controls sites at the north and east of the project area.
- The Northeast Development Area (NEDA) consistent of one cleanup complete – institutional controls site at the east of the project area.

The DEC will be consulted for guidance on how to proceed. Potentially contaminated soils will be tested, handled, and if necessary, disposed of in accordance with DEC-approved procedures. If additional contaminated or hazardous materials are encountered during construction, all work in the vicinity of the contamination will be stopped.

Additional information about these sites is available on the ADEC Division of Spill Prevention and Response website: http://dec.alaska.gov/spar/csp/db_search.htm. Include only those sites listed as 'Active' or 'Cleanup Complete – Institutional Controls'

3.3 Reference Documents Available

Listed below are the reference documents available for this project. Please contact the Project Engineer for assistance in obtaining these documents.

- *Subsurface Exploration and Preliminary Pavement Recommendations Juneau International Airport Runway Safety Area Improvements – Phase 2B, June 2016* – available from CBJ during the bidding process

4.0 NATURE OF CONSTRUCTION ACTIVITY (5.3.4)

4.1 Scope of Work

The Proposed Action would:

- Construct the Northwest (NW) Apron in the NWDA
- Construct a Snow Removal Equipment Facility (SREF) in the NWDA
- Install a ground source heat pump (geothermal loop) field south of the SREF in the NWDA
- Install a fueling station and covered outdoor storage in the NWDA
- Construct the Northeast (NE) Apron in the NEDA

4.2 Project Function (5.3.4.1)

The objective of this project is to improve safety and storage capacity at the NWDA and NEDA.

4.3 Support Activities (As Applicable)

Modify support activities table, as necessary.

Support activities for this project are:

<u>Support Activity</u>	<u>Location</u>	<u>Dedicated</u>	
		<u>Yes</u>	<u>No</u>
Concrete Batch Plant		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Asphalt Batch Plant	Contractor to determine location	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Equipment Staging Yards	Contractor to determine location	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Material Storage Areas	Contractor to determine location	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Excavated Material Disposal Areas	Contractor to determine location	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Borrow Areas	Contractor to determine location	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.4 Sequence and Timing of Soil-disturbing Activities (5.3.4.2)

The contractor will be required to finish, either temporary or final stabilized, individual areas prior to moving on to the next area. The contractor will be required to prepare a detailed schedule for review and approval prior to commencement of construction activities and is to be included in the SWPPP. The schedule will detail the sequence of activities and describe the stabilization schedule. The contractor must adapt this section with their specific plans in the project SWPPP.

4.5 Size of Property and Total Area expected to be Disturbed (5.3.4.3)

The following are estimates of the NWDA construction site:

<u>Description</u>	<u>Number</u>	<u>Remarks</u>
Total project area:	9.8 acres	
Construction-site area to be disturbed:	9.8 acres	
Percentage impervious area BEFORE construction:	0 %	
Runoff Coefficient BEFORE construction:	0.6	For earthen surfaces
Percentage impervious area AFTER construction:	100 %	
Runoff coefficient AFTER construction:	0.85	For paved surfaces

The following are estimates of the NEDA construction site:

Description	Number	Remarks
Total project area:	21.5 acres	
Construction-site area to be disturbed:	21.5 acres	
Percentage impervious area BEFORE construction:	0 %	
Runoff Coefficient BEFORE construction:	0.6	For earthen surfaces
Percentage impervious area AFTER construction:	100 %	
Runoff coefficient AFTER construction:	0.85	For paved surfaces

The values shown in the table above were calculated with the information available at the time of the final design. The contractor's values will be different due to staging areas, batch plants, material stockpiles, etc. The *Alaska Storm Water Guide* was used to calculate the Runoff Coefficient. If a discrepancy is found, contact the Project Engineer to request further information.

4.6 Identification of All Potential Pollutant Sources (5.3.4.5)

Identify and list all potential sources of sediment from construction materials and activities which may affect the quality of storm water discharges from the construction site.

Identify and list all potential sources of pollution, other than sediment, from construction materials and activities which may affect the quality of storm water discharges from the construction site.

Potential sources of sediment to storm water runoff:

Construction materials and activities that have the potential to contribute to sediment pollution originating from areas disturbed by the project include:

Source	Storm Water Pollutants	Location
Excavation/Backfilling/Grading	Silt, Sand, Gravel, Organic Soil	Within the project limits and areas disturbing by construction activity
Paving	Sand, Gravel	Within project limits and areas or paving operations
Stockpiles	Silt, Sand, Gravel	Within the general construction staging area and areas of excavation & fill activities
Construction Dust	Silt, Sand	Within the project limits and areas disturbing by construction activity
Vehicle Tracking	Silt, Sand, Gravel, Organic Soils	At project exits

Potential pollutants and sources, other than sediment, to storm water runoff:

Construction materials that have the potential to contribute pollutants other than sediment to storm water runoff include:

Trade Name Material	Storm Water Pollutants	Location
Diesel Fuel/Gasoline/Hydraulic Oil/Lubricants	Petroleum distillate, oil, grease, naphthalene, xylene	Within the project limits and materials staging areas
Coolant	Ethylene Glycol, heavy metals (cooper, lead, zinc)	With the project limits and material staging areas
Sanitary Toilet	Fecal Coliform	General construction staging area
Fertilizer	Nitrogen, Phosphorus	Areas requiring seeding operations
General Site Litter	Paper, Plastic	With the project limits and material staging areas
Paving/Recycled Asphalt Pavement (RAP)	Petroleum distillate, oil	With the project limits and material staging areas
Portland Cement Concrete (P.C.C.)/Grout	Limestone, sand, pH, chromium	With the project limits and material staging areas

No pollutant sources from areas other than construction have been identified for this project.

5.0 SITE MAPS (5.3.5)

Site map(s) and drawings are located in Appendix A.

The SWPPP must include a legible site map (or set of maps for large projects) showing the entire site and identifying the following site-specific information:

1. North Arrow **(ESCP)**
2. Property boundaries **(ESCP)**
3. Locations where earth-disturbing activities will occur, noting any phasing dictated by design **(ESCP)**
4. Location of areas that will not be disturbed and natural features to be preserved **(ESCP)**
5. **New:** Locations of all storm water conveyances including ditches, pipes, and swales **(ESCP)**
6. **New:** Locations of storm water inlets and outfalls, with a unique identification code for each outfall **(ESCP)**
7. **New:** Location where storm water and/or authorized non-storm water discharges to waters of the U.S. (including wetlands) or a Municipal Separate Storm Sewer Systems (MS4), if present **(ESCP)**
8. Direction of storm water flow and approximate slopes anticipated after grading activities **(ESCP)**
9. Locations where control measures will be installed **(ESCP)**
10. Locations where exposed soils will be or have been stabilized
11. Locations where post-construction storm water controls will be installed (i.e. seeding areas, matting, riprap, sedimentation basins, etc.) **(ESCP)**
12. Locations of support activities, if known
13. Locations where authorized non-storm water will be used
14. **New:** Locations and sources of run-on to the site from adjacent property that may contain quantities 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 your construction site, if applicable **(ESCP)**
15. Locations of all waters of the U.S. (including significant wetland areas 10,000 square feet or greater) on the site within 2,500 feet of the site boundary (~1/2 mile on each side of road) that may be affected by storm water discharges from the site (see Section 7.1) **(ESCP)**
 - a. This can be shown on a general location map (USGS quad map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the U.S. within the one mile distance.
16. Location 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. The DWPAs can be found using the interactive web map application, "Alaska DEC Drinking Water Protection Areas", located at http://dec.alaska.gov/eh/dw/dwp/protection_areas_map.html **(ESCP)**
17. Sampling point(s), if applicable
18. Areas where final stabilization has been accomplished
19. Location of staging and material storage areas (construction materials, hazardous materials, fuels, etc.) **(ESCP, if known)**
20. Dumpsters
21. Porta-potties
22. Concrete, paint, or stucco washout areas
23. Stabilized construction exits **(ESCP, if known)**

6.0 DISCHARGES

Subject to compliance with the terms and conditions of the ACGP, the permittee is authorized to discharge pollutants in storm water discharges from the site. If the permittee is eligible for coverage under ACGP and does not comply with the requirements of the ACGP, the permittee may be in violation of this general permit for otherwise eligible discharges.

Instructions:

Describe and identify the location of any storm water discharge associated with support activities, including discharges from dedicated asphalt and concrete plants covered by the ACGP (5.3.8).

As defined in Appendix C of the 2016 ACGP, a discharge point is the location where collected and concentrated stormwater flows are discharged from the construction site. The Site Maps located in Appendix A show the project's identified discharge points; however, the final determination of the project's discharge point will be established in the field.

6.1 Locations of Other Industrial Storm Water Discharges (5.3.8)

The contractor is required to identify discharges from related support activities. Portable batch plants located on CBJ-supplied property must be included in the contractor's SWPPP and related inspections.

Locations of additional stormwater discharges associated with construction but not provided with this project may include the following support activities:

- Equipment staging areas
- Material staging areas
- Excavated material disposal areas

6.2 Allowable Non-Storm Water Discharges (1.4.3; 4.3.7; 5.3.9)

The contractor must list all allowable non-storm water discharges and describe how the discharges will be minimized and managed to reduce pollution to storm water in the contractor's SWPPP.

Allowable Non-Storm Water Discharges:

- Discharges from fire-fighting activities (1.4.3.1)
- Fire hydrant flushing (1.4.3.2)
- Waters used to wash vehicles where detergent are not used (1.4.3.3)
- Water used to control dust (1.4.3.4)
- Potable water including uncontaminated water line flushings (1.4.3.5)
- Routine external building wash down that does not use detergents (1.4.3.6)
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used (1.4.3.7)
- Uncontaminated air conditioning or compressor condensate (1.4.3.8)
- Uncontaminated, non-turbid discharges of ground water or spring water (1.4.3.9)
- Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated groundwater (1.4.3.10)
- Construction dewatering waters that are treated by an appropriate control measure in compliance with Part 4.4.2 or have been treated with treatment chemicals in compliance with Part 4.6 (1.4.3.11)
- Landscape irrigation (1.4.3.12)

7.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO TOTAL MAXIMUM DAILY LOADS (3.2, 5.6)

A search of the “Alaska's Final 2012 Integrated Water Quality Monitoring and Assessment Report” found no listings or impairments for the Mendenhall Wetlands – State Game Refuge; though two nearby streams had listings or impairments for Duck Creek and Jordan Creek. Both streams are relatively close to the NWDA and NEDA but are not expected to collect any stormwater discharge from the construction sites.

Duck Creek (AK ID #10301-005) and Jordan Creek (AK ID #10301-004) were both placed on Section 303(d) list Category 5 in 1994 and 1998, respectively. Duck Creek was placed for dissolved gas, toxic & other deleterious organic and inorganic substances, while Jordan Creek was placed for debris, sediment and dissolved gas. For Duck Creek, once the total maximum daily load (TMDL) was completed in 2002/2003 and Jordan Creek on 2005 and a second TMDL on 2009, both streams were moved to a Category 4a.

7.1 Identify Receiving Waters (5.3.3.3)

Description of receiving waters:

Duck Creek: Duck Creek runs along the edge of the NWDA project site and is identified in the *Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes – Southeastern Region* (AWC), developed by the Alaska Department of Fish and Game (ADF&G), dated June 2015, as 111-50-10500-2002. The AWC indicates Duck Creek provides spawning and/or permanent habitat for coho salmon and Dolly Varden char.

Jordan Creek: Jordan Creek resides across Taxiway E-1 of the NEDA project site and is identified in the AWC as 111-50-10620. The AWC indicates Jordan Creek provides spawning and/or permanent habitat for chum salmon, coho salmon, and Dolly Varden char but has been rapidly declining because of serious sediment problems in the stream.

Mendenhall River: The Mendenhall River is located at the west side of the JNU. The river collects stormwater discharge from Duck Creek and from the Seaplane Base where the stormwater will outfall into Fritz Cove.

Mendenhall Wetlands – State Game Refuge: The Mendenhall Wetlands resides at the south of JNU. The 4,000 acre wildlife refuge provides a vital feeding and resting area for both resident birds and migrants along the shores of the Gastineau Channel and Fritz Cove.

Seaplane Base: The Seaplane Base is approximately an 80 acre basin south of the runway facilitating water takeoffs and landings. The basin collects stormwater from the channels and culverts within the airport area and acts as a sedimentation basin and ultimately discharges out into the Mendenhall Wetlands.

Outstanding Natural Resource Waters (2.1.6):

The Alaska Department of Environmental Conservation (ADEC) must be consulted, at least 30 days prior to construction activities, when determining requirements for water quality analysis on all projects that meet the following:

- Will or may discharge stormwater to a Tier 3 water body, also known as Outstanding Natural Resource Waters (ONRW).

For this project, the contractor is not required to contact ADEC prior to the commencement of construction activities that may discharge to a high quality water, due to the following:

1. Although the project does discharge to Mendenhall Wetlands, the seaplane base, and an unnamed basin, none of the waters are identified as a Tier 3 water body.

- The project does discharge into Mendenhall Wetlands – State Game Refuge, however as expressed in Section 2.1.6 of the ACGP, as of the date of the permit's issuance, no Outstanding Natural Resource Waters have been designated in Alaska by ADEC.

Description of storm sewer and/or drainage systems:

The drainage system for stormwater collected from the project sites will runoff into existing storm drains, culverts, and channels surrounding the NWDA and the NEDA, while avoiding Duck Creek and Jordan Creek. All stormwater will outfall into the seaplane base or directly into the Mendenhall Wetlands – State Game Refuge where the stormwater will ultimately discharge to the Gastineau Channel and Fritz Cove.

7.2 Identify TMDLs (5.6.1)

Is an EPA-established or approved TMDL published for the receiving water(s) listed in Section 7.1?

Yes No

TMDL: Sediment, Dissolved Gas, Toxic & Other Deleterious Organic and Inorganic Substances

10301-005 Duck Creek – Category 4a

10301-004 Jordan Creek – Category 4a

Summary of consultation with state or federal TMDL authorities (5.6.2):

No consultation was completed; the proposed project will not create and/or meet any of the TMDL listed above for which the water body is listed as impaired.

TMDL information is included in Appendix D. Additional detailed TMDL information can be found at the ADEC website: <http://dec.alaska.gov/water/tmdl/approvedtmdls.htm>

Measures taken to ensure compliance with TMDL (5.6.3):

The propose project will not discharge any stormwater runoff from the construction site into Duck Creek and Jordan Creek and will have negligible effect on the streams.

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 (3.3, 5.7)

8.1 Information on Endangered or Threatened Species or Critical Habitat (5.7.1)

Are endangered or threatened species and critical habitats on or near the project area?

Yes No

Describe how this determination was made:

Utilizing the USFWS Information, Planning, and Conservation (IPAC) development tool located at the website <https://ecos.fws.gov/ipac/>, these ensuring determinations were made:

- There are no Endangered Species Act-listed species within the project area.
- There are no critical habitats within the project area.

Will species or habitat be adversely affected by stormwater discharge?

Yes No

9.0 APPLICABLE FEDERAL, STATE, TRIBAL, OR LOCAL REQUIREMENTS (4.15)

The project will comply with all applicable Federal, State, Local, and Tribal requirements for soil erosion control and storm water management.

The contractor will be responsible for obtaining all necessary permits and clearances for material and disposal sites, and/or equipment storage areas in accordance with the ACGP for Storm Water Discharges from Construction Activities.

Historic Properties

Are there any historic sites on or near the construction site?

Yes No

Describe how this determination was made:

The determination was made through a search of the National Register of Historic Places available through the National Park Service website.

If cultural or paleontological resources are discovered after the initial commencement of construction activities, work that would disturb such resources is to be stopped, and the Office of History and Archaeology, a Division of Parks and Outdoor Recreation of the Alaska Department of Natural Resources (<http://dnr.alaska.gov/parks/oha/index.htm>), is to be notified immediately at (907) 269-8721.

It is the Contractor's responsibility, thru the Project Engineer, to get clearance for material and disposal sites that have not been assessed during the Design phase of the project.

General Principles for Erosion and Sediment Controls.

You must design, install, and maintain effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

- Control storm water volume and velocity to minimize soil erosion and pollutant discharges;
- Control storm water discharges, including both peak flowrates and total storm water volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points;
- Minimize the amount of soil exposed during construction activity;
- Minimize the disturbance of steep slopes;
- Minimize sediment discharges from the site. The design, installation, and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity, duration of precipitation; the nature of resulting storm water runoff; and soil characteristics, including the range of soil particle sizes expected to be present on the site;
- Provide and maintain natural buffers around waters of the U.S., direct storm water to vegetated areas and maximize storm water infiltration to reduce pollutant discharges, unless infeasible;
- Minimize soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates it be compacted.
- Unless infeasible, preserve topsoil. Preserving topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.

Additional Erosion and Sediment Controls Selection and Design Considerations:

- Preventing storm water from coming into contact with polluting materials is generally more effective, and less costly, than removing pollutants from storm water;
- Using a combination of control measures is more effective than using control measures in isolation for minimizing pollutants in the storm water discharge;
- Using technologically available, economically practicable, and achievable methods in light of best industry practices;
- Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective control measures that will achieve the limits in this permit;
- Minimizing impervious areas at the permittees facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) can reduce runoff and improve groundwater recharge and stream base flows in local streams, although care must be taken to avoid ground water contamination;
- Dissipate storm water runoff into open vegetated swales and natural depressions to reduce in stream impacts of erosive flows;
- Conserving and/or restoring of riparian buffers will help protect streams from storm water runoff and improve water quality; and
- Using treatment interceptors (e.g., sand filters) may be appropriate in some instances to minimize the discharge of pollutants.

Describe the Best Management Practices (BMPs) to be implemented to control pollutants in storm water discharges. For each major activity identified:

- Clearly describe appropriate control measures.
- Describe general sequence during the construction process in which the measures will be implemented.
- Describe maintenance and inspection procedures to be undertaken for that specific BMP.
- Include protocols, thresholds, and schedules for cleaning, repairing, and/or replacing damaged or failing BMPs.
- Identify staff responsible for maintaining BMPs. (If your SWPPP is shared by multiple operators, indicate the operator responsible for each BMP.)

Categorize each BMP under one of the following areas of BMP activity as described below:

1. *Minimize the Amount of Soil Exposed during Construction Activity (4.2.2) & Site Delineation (4.2.1)*
 2. *Maintain Natural Buffer Areas (4.2.3) & Clearing Vegetation (4.2.4)*
 3. *Control Storm Water Discharges and Flow Rates (4.2.5)*
 4. *Protect Steep Slopes (4.2.6)*
 5. *Storm Water Inlet Protection (4.3.1)*
 6. *Water Body Protection (4.3.2)*
 7. *Down-Slope Sediment Controls (4.3.3)*
 8. *Stabilized Construction Vehicle Access and Exit Points (4.3.4)*
 9. *Dust Generation and Track-Out from vehicles (4.3.5)*
 10. *Soil Stockpiles (4.3.6)*
 11. *Sediment Basins (4.3.8)*
 12. *Dewatering (4.4)*
 13. *Soil Stabilization (4.5)*
 14. *Treatment Chemicals / Active Treatment Systems (4.6)*
 15. *Good Housekeeping Measures (4.8)*
 16. *Spill Notification (4.9)*
 17. *Construction and Waste Materials (5.3.7)*
 18. *Permanent/Post-Construction BMPs (4.11)*
 19. *Projects near a Public Water System (PWS) (4.10)*
- Note the location of each BMP on your site map(s).
 - Any structural BMPs should have design specifications and details referred to in Section 11 or included in Appendix B.

For more information or ideas on BMPs, see the ADEC Alaska Storm Water Guide:

<http://dec.alaska.gov/water/wnpssc/stormwater/Guidance.html> & for a list of Alaska specific BMPs look at the DOT&PF Alaska SWPPP Guide's Appendix B - BMP Guide for Erosion & Sediment Control at http://www.dot.state.ak.us/stwddes/desenviron/assets/pdf/bmp/bmp_all.pdf

10.0 CONTROL MEASURES/BEST MANAGEMENT PRACTICES (4.0; 5.3.6)

Much of the guidance in this section is for both the ESCP & SWPPP preparers. Carefully read through the requirements listed below when filling out Section 11. When developing this section, think about how they are going to construct the project. Look at means and measures but do not direct the contractor...merely suggest. Consider 'prior to/upon construction' methods (i.e. upon placing culvert install a fiber roll and outlet protection). The following sections describe BMPs that will or may be used as necessary to prevent erosion and control sediment.

The selection, design, installation, maintenance, and removal of control measures must be in accordance with good engineering practices, manufacturer specifications, and address site-specific conditions such as precipitation, site topography, soil characteristics, and growing season.

The plan preparer will use this section to describe the types and locations of control measures and BMPs to be installed and maintained in accordance with ACGP Part 4.0.

Describe each control measure and BMP, including installation schedule and maintenance, inspection, and removal requirements. You may include a brief description of each BMP in this section and refer to detailed installation, maintenance, inspection, removal requirements, and manufacturer's specifications that **MUST** be included in the Appendix B.

If a control measure or BMP will be used to comply with more than one element of this section, you do not need to repeat the detailed installation, maintenance, inspection, removal requirements, and manufacturer's information. For each repeated element, identify the control measure or BMP to be used, and refer to the section or Appendix B where the detailed information is presented.

The person(s) identified in Section 2.0 of this SWPPP will be responsible for ensuring compliance with the installation, maintenance, inspection, and removal of these control measures.

The format to be used to describe is:

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 provided, ensure the attached sheets clearly identify this information.

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:

CBJ requires citations for the BMP manual or publication used to select and design the BMP, along with schematics or descriptions of the BMP. If no BMP manual or publication was used to select or design a given BMP then state “No BMP manual or publication was used in the design or selection of this BMP”. BMP designs submitted by the contractor and approved by the Project Engineer may be used but still must state that no manual or publication was used.

BMP Manuals/Publications: 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 attach the appropriate pages to the plan.

Be careful when citing outside of the state control measures or BMPs. Read through them to make sure they do not put any additional restrictions that go beyond the ACGP. If citing outside of state BMPs, make sure to mark out any requirements that do not apply to this project or do not meet ACGP requirements and cite as ‘modified from (insert BMP manual title).

CBJ Specifications and Plan Sheets: The publication cited may be the CBJ contract specifications and plan sheets provided that the minimum information regarding the BMP is included (those listed above).

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 plan preparer must provide the missing information in the plan. Any drawing or description developed by the plan preparer must include the statement “No BMP manual or publication was used for this design.”

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 plan. It may also be helpful to provide the manufacturer’s website if the information was obtained online. You may deviate from manufacturer’s specifications where you provide justification for such deviation and include documentation of your rationale in the ESCP/SWPPP.

10.1 Site Delineation (4.2.1) & Minimize Amount of Soil Exposed during Construction (4.2.2)

Describe how the land disturbed area will be delineated, including clearing and grading and how those areas that are to be left undisturbed such as trees, boundaries of sensitive areas, or buffers established by ACGP Part 4.2.3 will be delineated.

Describe the areas that will be disturbed with each phase of construction and methods (signs, fences, etc.) you will use to protect those areas that should not be disturbed. Construction activities must be phased to minimize the extent and duration of exposed soil.

Describe natural features identified and how each will be protected during construction activity.

Describe how topsoil will be preserved.

The project area is located near the Mendenhall Wetlands – State Game Refuge. All efforts shall be employed by the contractor to minimize impacts to the Refuge. Work limits in dig-out locations will be delineated by slope stakes, silt fence, fibers rolls, or some other means prior to initiating construction activities. Vegetation and the root mass shall be left in place wherever possible to the greatest extent practicable, unless otherwise directed by the Engineer.

BMP Description: *Flagging and Fencing of Clearing Limits/Site Delineation, A-7*

BMP Manual/Publication: *Municipality of Anchorage (MOA), Storm Water Treatment Plan Review, September 2010*

<input type="checkbox"/> Permanent		<input checked="" type="checkbox"/> Temporary	
Installation Schedule:		Prior to the initiation of construction activities.	
Maintenance and Inspection:		<u>Inspection:</u> Look for flagging or fencing that does not adequately delineate undisturbed areas, trees, boundaries of sensitive areas, or natural buffer areas. <u>Maintenance:</u> Make repairs, if any conditions noted under inspection are found.	
Responsible Staff:		SWPPP Manager & Superintendent, Contractor	

BMP Description: *Preservation of Existing Vegetation, AK-1*

BMP Manual/Publication: *State of Alaska Department of Transportation and Public Facilities (DOT&PF), Alaska SWPPP Guide, February 2011*

<input checked="" type="checkbox"/> Permanent		<input type="checkbox"/> Temporary	
Installation Schedule:		Before clearing or ground disturbing operations begin.	
Maintenance and Inspection:		<u>Inspection:</u> Look for area where the preservation barrier has been removed or visibility of the barrier has been reduced. <u>Maintenance:</u> Make repairs, if any conditions noted under inspection are found.	
Responsible Staff:		SWPPP Manager & Superintendent, Contractor	

10.2 Maintain Natural Buffer Areas (4.2.3)

Are stream crossings or waters of the U.S. located within or immediately adjacent to the property?

Yes No

If YES, describe the control measures to be implemented to comply with the ACGP Part 4.2.3 (e.g., buffer areas, perimeter controls, etc.).

You must maintain natural buffer areas at stream crossings and around the edge of any waters of the U.S. that are located within or immediately adjacent to the construction activity in accordance with the following:

- The buffer must be a minimum of 25 feet wide, or the width as required by local ordinance, unless infeasible based on site dimensions;
- Exceptions are allowed for water dependent activities, specific water access activities, or necessary water crossings;
- A permittee should, to the extent practicable, use perimeter controls adjacent to buffers and direct storm water sheet flow to buffer areas to increase sediment removal and maximize storm water infiltration.

Duck Creek, Jordan Creek, the Seaplane Base, and Mendenhall Wetlands are located adjacent to the proposed project sites. Measures will be taken to ensure that construction activities will have minimal impacts on the natural buffer areas of these water bodies. In addition, construction activities are not expected to encroach upon their natural buffer zones and stormwater shall not discharge into Duck Creek and Jordan Creek. Use perimeter controls adjacent to buffer areas to the extent practicable, and direct stormwater sheet flow towards the buffer areas in an effort to increase sediment removal and maximize the infiltration of stormwater, unless infeasible.

BMP Description: *Vegetation Buffer, BMP-38.00*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, December 2015*

Permanent **Temporary**

Installation Schedule:	Use existing vegetation before starting work in an area.
Maintenance and Inspection:	<u>Inspection:</u> Look for damage caused by equipment and/or vehicles. Look for eroded areas within the vegetation caused by concentrated water flows. <u>Maintenance:</u> Make repairs, if any conditions noted under inspection are found.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.2.1 Clearing Vegetation (4.2.4)

Clearing of vegetation that disturbs the vegetative mat and exposes soil is **prohibited** prior to obtaining authorization under the.

Cutting of trees and brush while the ground is frozen without disturbing the vegetative mat for the purpose of clearing in accordance with the U.S. Fish & Wildlife Service "Recommended Time Periods for Avoiding Vegetation Clearing" is allowed prior to the submittal of a project NOI. If vegetation clearing that disturbs the vegetative mat and occurs after the onset of spring thaw (as defined in Appendix C) or conditions that consist of above freezing temperatures that cause melting of snow, the permittee must develop a SWPPP and file an NOI. Operators must receive authorization under this permit and otherwise comply with the terms of this permit prior to such clearing.

10.3 Control Storm Water Discharges and Flow Rates (4.2.5)

Describe control measures to comply with the ACGP (e.g., divert storm water around the site, slow down or contain storm water, use of velocity dissipation devices, installing permanent storm water management controls prior to construction of site improvements to the extent practicable, etc.). Storm water that may concentrate must be slowed down or contained.

Velocity dissipation devices, such as outlet protection structures, will be used at the outlet of culvert pipes of discharged stormwater. Fiber rolls will also be used at the inlets of culvert pipes to act as sediment traps. In many instances, a series of BMPs will be used.

BMP Description: Outlet Protection, AK-5

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, February 2011

Permanent **Temporary**

Installation Schedule:	All outlet protection measures will be installed within 24 hours of culvert and downdrain placement.
Maintenance and Inspection:	<u>Inspection:</u> Look for scouring, dislodged stones, and look for erosion around or below rocks. Outlet protection structures should also be monitored for sediment accumulation filling the voids between rocks. <u>Maintenance:</u> Make repairs if any conditions noted under inspection are found. Remove sediment when it fills void between rocks.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

BMP Description: Culvert Inlet Protection/Fiber Roll, BMP-08.00

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, December 2015

Permanent **Temporary**

Installation Schedule:	Immediately subsequent to the installation and backfilling of culverts. All culvert inlet protection measures will be installed within 24 hours of culvert placement.
Maintenance and Inspection:	<u>Inspection:</u> Look to see that fiber rolls are in contact with the soil and are entrenched. Look to see for sediment accumulation, displacement, and structural damage. <u>Maintenance:</u> If rolls are crushed, torn, slumping or split, the damaged sections must be replaced. Remove sediment accumulated upslope of the roll when it reaches one-half the distance between the top of the fiber roll and the ground surface.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.3.1 Protect Steep Slopes (4.2.6)

Will steep slopes be present at the site during construction? Yes No

If YES, describe control measures to be implemented to comply with ACGP Part 4.2.6 (e.g., reduce continuous slope length, divert storm water around slopes, stabilized exposed areas, etc.).

Sediment Controls:

Sediment control measures (e.g. sediment ponds, traps, filters, etc.) must be constructed as one of the first steps in grading. These control measures must be functional before other land disturbing activities take place.

10.4 Storm Drain Inlet Protection Measures (4.3.1)

Describe control measures (e.g., filter berms, perimeter controls, temporary diversion dikes, etc.) to be implemented to protect all inlets receiving storm water from the project during the duration of the project.

Existing storm drains are present near the NEDA project site. Sediment controls, such as inlet protection, shall be used to protect receiving waters from excessive sedimentation.

BMP Description: *Inlet Protection, BMP AK-19*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, February 2011*

Permanent **Temporary**

Installation Schedule:	Install in existing inlets prior to soil disturbance in contributing drainage area. Install in new inlets immediately after inlet construction.
Maintenance and Inspection:	<u>Inspection:</u> Regularly after every storm. <u>Maintenance:</u> Remove sediment and restore structure to its original dimensions when sediment has accumulated one-third of the design depth, or as directed by the manufacturer.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.5 Water Body Protection Measures (4.3.2)

Describe control measures selected to minimize discharge of sediment prior to entry into water bodies located on or immediately downstream of the site.

Perimeter controls and sediment barriers, such as vegetation buffers and silt fence, shall be used to protect receiving waters from excessive sedimentation.

BMP Description: *Rock Vegetation Buffer, BMP-38.00*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, December 2015*

Permanent **Temporary**

Installation Schedule:	Use existing vegetation before starting work in an area.
Maintenance and Inspection:	<u>Inspection:</u> Look for damage caused by equipment and/or vehicles. Look for eroded areas within the vegetation caused by concentrated water flows. <u>Maintenance:</u> Make repairs if any conditions noted under inspection are found.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

BMP Description: *Silt Fence, BMP-20.00*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, December 2015*

Permanent **Temporary**

Installation Schedule:	Installed prior to soil disturbance in the contributing drainage area.
Maintenance and Inspection:	Inspections are performed a minimum of weekly and after significant rainfall. <ul style="list-style-type: none"> • Repair functional deficiencies immediately. • Reinforce fence-line as needed to prevent undesirable

	sedimentation of sensitive areas. <ul style="list-style-type: none"> • Replace torn or punctured fabric • Remedy fence sags • When accumulated sediment reaches one-third of above ground height or capacity, remove of silt/sediment waste in an approved manner and location.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.6 Down-Slope Sediment Controls (4.3.3)

Describe sediment controls (e.g., silt fence or temporary diversion dike) for any portion of the down-slope and side-slope perimeter where storm water will be discharged from disturbed areas of the site.

Sediment control measures such as fiber rolls, silt fence, and vegetation buffers will be used on any portion of the site where water traveling over disturbed areas of the site will be discharged off-site, around soil stockpiles, or into a body of water. These control measures will be functional before ground disturbing activities take place.

BMP Description: Fiber Rolls For Erosion and Sediment Control, BMP-10.00

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, December 2015

<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Installed prior to soil disturbance in the contributing drainage area.
Maintenance and Inspection:	<p><u>Inspection:</u> Look to see that fiber rolls are tightly abutted and that fiber rolls are in contact with the soil and entrenched. Also look for scouring underneath the rolls.</p> <p><u>Maintenance:</u> If rolls are crushed, torn, slumping or split, the damaged sections must be replaced. Remove sediment accumulated upslope of the roll when it reaches one-half the distance between the top of the fiber roll and ground surface.</p>
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

BMP Description: Silt Fence, BMP-20.00

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, December 2015

<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Installed prior to soil disturbance in the contributing drainage area.
Maintenance and Inspection:	<p>Inspections are performed a minimum of weekly and after significant rainfall.</p> <ul style="list-style-type: none"> • Repair functional deficiencies immediately. • Reinforce fence-line as needed to prevent undesirable sedimentation of sensitive areas. • Replace torn or punctured fabric. • Remedy fence sags. • When accumulated sediment reaches one-third of above ground height or capacity, remove of silt/sediment waste in an approved manner and location.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

BMP Description: *Vegetation Buffer, BMP-38.00*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, December 2015*

<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Use existing vegetation before starting work in an area.
Maintenance and Inspection:	<u>Inspection:</u> Look for damage caused by equipment and/or vehicles. Look for eroded areas within the vegetation caused by concentrated water flows. <u>Maintenance:</u> Make repairs if any conditions noted under inspection are found.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.7 Stabilized Construction Vehicle Access and Exit Points (4.3.4)

Vehicle access points must be limited as much as possible and must be stabilized.

Describe location(s) of vehicle entrance(s) and exit(s), procedures to remove accumulated sediment off-site (i.e., vehicle tracking), and stabilization practices (i.e., stone pads and/or wash racks) to minimize off-site vehicle tracking of sediments and discharges to storm water.

Any rubber tire operating on bare soils will require a stabilized entrance/exit prior to driving on paved surfaces. Tracked equipment must be cleaned prior to operating on paved surfaces. The existing gravel surfaces will be used for the stabilized access and exit points.

BMP Description: *Stabilized Construction Exit, BMP-23.00*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, December 2015*

<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Installed prior to any rubber tired vehicles or construction equipment leaving the site.
Maintenance and Inspection:	Inspect pads and sediment trapping structures daily for sediment accumulation and material displacement. <ul style="list-style-type: none">• Maintain each entrance in a condition that will prevent tracking of mud or sediment onto public rights-of way.• Replace gravel when surface voids are visible.• Remove all mud and sediment deposited on paved roadways within 24 hours.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.8 Dust Generation and Track-Out from Vehicles (4.3.5)

Describe control measures to minimize the generation of dust and off-site vehicle tracking of sediment. Dust must be minimized prior to the vehicle exist by application of water or other dust suppression techniques.

The contractor will be required to remove any debris including soil and aggregate from the roadway. Any material tracked will be swept up daily.

BMP Description: *Street Sweeping and Vacuuming, SC-7*

BMP Manual/Publication: *Caltrans, Construction Site Best Management Practices Manual, March 2003*

<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
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Installation Schedule:	Implement anywhere sediment is tracked from the project site onto public or private paved roads, typically at points of ingress/egress.
Maintenance and Inspection:	Inspect ingress/egress access points daily and sweep tracked sediment as needed, or as required by engineer.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.9 Soil Stockpiles (4.3.6)

Will soil stockpiles be at the site during construction? Yes No

If YES, describe control measures intended to control sediment loss from the stockpiles (e.g., tarps or perimeter straw wattles). Show location(s) of stockpile(s) on site maps, if known. Stockpiles must be stabilized or covered, protected with sediment controls and located away from storm water inlets, conveyance channels or water bodies, if possible.

Temporary stockpiles may be required on-site. Stockpiles containing erodible material shall be protected by covering with soil binders, plastic sheeting, mulch, or other products to prevent erosion.

BMP Description: Plastic Covering BMP-12.00

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, February 2011

Permanent Temporary

Installation Schedule:	Plastic covering will be installed when the stockpile will not be actively worked on more than 14 days or when there are windy conditions. Plastic covering will be secured either by weighted or trenched method.
Maintenance and Inspection:	<u>Inspection:</u> Look for unsecured covering or locations of erosion under the covering. <u>Maintenance:</u> Re-secure covering.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.10 Sediment Basins (4.3.8)

Refer to ACGP Part 4.3.8 to determine if a sediment basin is required for your site.

Will a sediment basin be required during construction? Yes No

If YES, provide a brief description of the sediment basin here. Append detailed design information in appendices (e.g., calculated volume of runoff from a two-year, 24-hour storm, or other assumptions used to calculate appropriate sediment-basin size). Show location of sediment basin(s) on site maps.

10.11 Dewatering (4.4)

Describe dewatering practices to be implemented if water must be removed from an area so construction activity can continue.

Will dewatering be conducted during construction? Yes No

Will excavation dewatering be conducted within 1,500 feet of an ADEC mapped contaminated site found on the ADEC website? Yes No

For ADEC's contaminated sites:

<http://www.arcgis.com/home/item.html?id=315240bf84aa0b8272ad1cef3cad3>.

If yes to above question, review and comply with the ADEC General Permit for Excavation Dewatering ([AKG002000](#)) or most current version, for specific requirements.

Excavation dewatering is anticipated for the installation of the ground source heat pumps at the NWDA. The excavation dewatering will be discharged into the Seaplane Base pond, located to the south of the airport runway. The Seaplane Base pond currently collects stormwater runoff from the airport property and acts as a sedimentation basin. Excavation dewatering and discharges will be subject to requirements set forth by the ADEC General Permit for Excavation Dewatering.

The ADEC website shows three active contaminated sites. A map of the sites is located in Appendix D and additional details for the sites can be found on the ADEC website. The following table lists the Hazard ID, site name, and approximate distance from the dewatering location:

Hazard ID	Site Name	Approx. Distance from Dewatering Location
3863	Mendenhall WW Treatment Plant	920 feet
22996	Alaska Airlines – Juneau Cargo Facility	1,500 feet
2987	Juneau Airport Fueling Facility	1,390 feet

The Contractor must install appropriate BMP's to minimize the discharge of sediment into the pond and identify a proposed treatment methodology to be incorporated into the BMP plan if contaminants can become entrained in the excavation dewatering and the contaminant discharge concentrations.

Describe control measures to be implemented to comply with dewatering discharges authorized either under the ACGP or the ADEC General Permit for Excavation Dewatering requirements.

BMP Description: Silt Curtain BMP-19.00

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, December 2015

Permanent Temporary

Installation Schedule:	Install silt curtain prior to starting dewatering activities.
Maintenance and Inspection:	<u>Inspection:</u> Look for visibility above the water surface along the entire length of the silt curtain. <u>Maintenance:</u> Adjust floatation to maintain visibility above water surface and maintain according to manufacturer's recommendations.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.12 Permanent/Post-Construction BMPs (4.11)

Describe any permanent/post-construction control measures that will be installed during the construction process AND have not been discussed elsewhere in this document.

Examples of these measures are:

Biofilters

Detention/Retention Devices

Earth Dikes, Drainage Swales, and Lined Ditches

Infiltration Basins

Vegetated Strips and/or Swales

10.12.1 Soil Stabilization (4.5, 5.3.6.3)

The project must stabilize all disturbed areas of the site to minimize on-site erosion and sedimentation and the resulting discharge of pollutants.

Soil stabilization requirements vary depending on the mean annual precipitation for the site. Refer to ACGP Part 4.5 for specific requirements.

Refer to the Alaska Plant Materials Center's Alaska Coastal Revegetation & Erosion Control Guide and Interior Alaska Revegetation & Erosion Control Guide at <http://plants.alaska.gov> for help in selecting appropriate seed mixes and information on methods for revegetation.

Describe permanent & temporary stabilization control measures and sequence of installation.

Describe how the site will be stabilized prior to seasonal freeze-up.

All disturbed areas of the site are required to be stabilized to minimize on-site erosion, on-site and off-site sedimentation, and to prevent the discharge of storm water that could adversely affect a receiving water body.

Temporary stabilization measures shall be initiated as soon as practicable and within one (1) calendar day on any portion of the site where grubbing, excavation, grading, or any other earth-disturbing activity has temporarily or permanently ceased. Mulching may be utilized as a temporary stabilization measure. Temporary stabilization measures shall be completed within fourteen (14) calendar days of their initiation.

Permanent stabilization measures shall be initiated as practicable and within one (1) calendar day after surface disturbing activities have permanently ceased. Surface roughening and terracing will be used in conjunction with seeding to aid in the establishment of vegetative cover. Riprap will also be used when necessary, for outlet protection at culvert locations. Final stabilization measures shall be completed within seven (7) calendar days of their initiation.

BMP Description: *Mulching, AK-9*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, February 2011*

Permanent **Temporary**

Installation Schedule:	Mulch will be applied to all seeded areas. Hydro mulching can be installed with the seed at specified rates. Bonded Fiber Matrix (BFM) will be used in all hydro seeding operations. Contractor to ensure that the product is allowed to "cure" or dry to prevent mulch from washing away.
Maintenance and Inspection:	<u>Inspection:</u> Look for mulch being too dry causing it to blow or wash away. Depth of material to prevent low seed germination rates. <u>Maintenance:</u> Replace mulch that has been loosened or dislodged. Water mulch areas periodically to ensure that moisture content will be maintained and seed germination and grass growth will continue.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

BMP Description: *Surface Roughening, BMP-30.00*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, December 2015*

<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Installed prior to the application of application measures.
Maintenance and Inspection:	<u>Inspection:</u> Inspect the areas every week and after each rainfall that produces runoff during construction. <u>Maintenance:</u> Seed, fertilize, and mulch areas which are graded as quickly as possible. Regrade and seed immediately if rills appear.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

BMP Description: Seeding

BMP Manual/Publication: No manual referenced.

<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Seeding should be done in accordance to the Plans and Specifications, after all construction or maintenance activities have ceased or been finalized. Temporary seeding should be considered for slope protection and erosion control for active construction sites. Conduct all seeding and fertilization in accordance with local requirements.
Maintenance and Inspection:	Inspect all seeded areas on a regular basis and after each major storm even to check for areas where corrective measures may have to be made. Continue monitoring until permanent vegetation is established. <ul style="list-style-type: none"> • Irrigation may have to be used in low precipitation areas for establishment. • Can be conducted in conjunction with various forms of mulching, matting, and annual grass as a nurse crop. • Limit re-disturbance of site. Reseed areas where growth is absent or inadequate. Provide additional fertilizer if needed.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.13 Treatment Chemicals (4.6; 5.3.6.4)

The use of treatment chemicals to reduce erosion from the land or sediment in a storm water discharge is allowed provided all the requirements of ACGP Part 4.6 are met.

Will treatment chemicals be used to control erosion and/or sediment during construction?

Yes No

If YES, comply with ACGP Part 4.6 and complete the following subsections. If NO, delete the following subsections.

10.14 Active Treatment System information (4.6.3.3)

A permittee who uses an Active Treatment System (ATS) as a control measure must submit information required by the ADEC for review at least 14 days prior to start of operation of the ATS at the project. Specific submittal requirements can be found at 4.6.3.

Will an ATS be used as a control measure at the site? Yes No

If YES, briefly describe the ATS process below and submit information required by ACGP Part 4.6.3.3 to the ADEC.

10.15 Good Housekeeping Measures (4.8)

The project must design, install, implement, and maintain effective good housekeeping measures to prevent and/or minimize the discharge of pollutants. The project must include appropriate measures for any of the following activities at the site.

Consult the ADEC Storm Water Guide or other resources for more information or ideas on BMPs. See also the EPA's National Menu of BMPs at <http://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater-documents> & for a list of Alaska specific BMPs look at the Alaska SWPPP Guide's Appendix B - BMP Guide for Erosion & Sediment Control at http://www.dot.state.ak.us/stwddes/desenviron/assets/pdf/bmp/bmp_all.pdf

10.15.1 Washing of Equipment and Vehicles (4.8.1)

Will equipment and vehicle washing and/or wheel wash-down be conducted at the site?

Yes No

If YES, describe the control measures to be implemented to comply with ACGP Part 4.8.1.

10.15.2 Fueling and Maintenance Areas (4.8.2)

Describe equipment/vehicle fueling and maintenance practices to be implemented to control pollutants to storm water (e.g., secondary containment, drip pans, spill kits, etc.).

Describe spill prevention and control measures to be implemented, including ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control.

Will equipment and vehicle fueling or maintenance be conducted at the site?

Yes No

The contractor's lay down yards, fueling and maintenance areas must be delineated on the contractor's SWPPP site map. Spill kits appropriate to respond to the hazards on site will be required. Inspections will include the contractor's fueling, maintenance, and laydown areas. Equipment will be maintained to prevent oils and grease from discharging with storm water. Prior to use each day, equipment operators are required to do a visual inspection for leaks, drips, and excess grease. If leaks cannot be repaired and stopped, the equipment will be placed out of service over drip pans and/or pads to collect any fluids or grease and prevent pollution discharge. Topping off fluids will not be allowed in lieu of maintenance. Equipment operators will look for excess grease accumulations, especially when the weather warms up, removing and properly disposing of excess grease to prevent discharge.

BMP Description: *Vehicle and Equipment Maintenance, AK-23*

BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, February 2011*

Permanent **Temporary**

Installation Schedule:	Fuel transfers should be completed using secondary containment such as drip pans under hose connections and at the nozzle.
Maintenance and Inspection:	Vehicle and equipment maintenance activities shall be located a minimum of 100 feet from water discharges.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

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.

10.15.3 Washout of Applicators/Containers Used for Paint, Concrete, and Other Materials (4.8.4)

Describe location(s) and controls to minimize the potential for storm water pollution from washout areas for concrete mixers, paint, stucco, etc.

Will washout areas for trucks, applicators, or containers of concrete, paint, or other materials be used at the site? Yes No

If YES, describe control measures to be implemented to comply with ACGP Part 4.8.4. If NO, delete the following paragraph.

The contractor will provide a designated concrete washout area. The washout area may be moved during the construction process but the location must be kept current on the site map. Concrete wash water may not be discharged with storm water. The washout must have sufficient capacity for the scheduled activities.

BMP Description: Concrete Washout, BMP-06.00

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, December 2015

Permanent **Temporary**

Installation Schedule:	Installed prior to any construction activities associated with wet concrete and/or grout.
Maintenance and Inspection:	<p>Inspect washout facilities frequently to determine if/when they have been filled to 50-percent capacity, which is when the materials need to be removed.</p> <ul style="list-style-type: none"> • Clean out facilities once the washout is one-half full. • If stored liquids are not evaporating and are reaching capacity, vacuum and dispose of liquids in an approved manner. • Removed hardened solids and re-use on site of haul away for recycling or disposal. • Inspect for signs of weakening or damage prior relining • Repair damaged facilities promptly. Contain any spill or discharge of waste material. <p>Replace or display new signage as needed.</p>
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.15.4 Fertilizer or Pesticide Use (4.8.5)

Describe fertilizers and/or pesticides expected to be used and/or stored on-site and procedures for storage of materials to minimize exposure of the materials to storm water.

Will fertilizers or pesticides be used at the site? Yes No

If YES, describe control measures to be implemented to comply with ACGP Part 4.8.5.

The hydro-seed mixture will contain fertilizer which will be applied on finished slopes within the project area; however, fertilizers are not expected to be stored on site.

BMP Description: Seeding	
BMP Manual/Publication: No manual referenced.	
<input checked="" type="checkbox"/> Permanent	<input type="checkbox"/> Temporary
Installation Schedule:	Seeding should be done in accordance to the Plans and Specifications, after all construction or maintenance activities have ceased or been finalized. Temporary seeding should be considered for slope protection and erosion control for active construction sites. Conduct all seeding and fertilization in accordance with local requirements.
Maintenance and Inspection:	Inspect all seeded areas on a regular basis and after each major storm even to check for areas where corrective measures may have to be made. Continue monitoring until permanent vegetation is established. <ul style="list-style-type: none"> • Irrigation may have to be used in low precipitation areas for establishment. • Can be conducted in conjunction with varies forms of mulching, matting, and annual grass as a nurse crop. • Limit re-disturbance of site. Reseed areas where growth is absent or inadequate. Provide additional fertilizer if needed.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.16 Spill Notification (4.9)

The contractor shall describe spill-notification procedures, including relevant federal, state, tribal, and local agency contact information, to be implemented in the event of a leak, spill, or release of hazardous substances or oil that occur at the construction site. Refer to ACGP Part 4.9 for permit requirements.

Contractor shall include final plan as approved by CBJ in Appendix O.

10.17 Construction and Waste Materials (4.8.6, 5.3.7)

Describe in general terms the type of construction and waste materials expected to be stored at the site, with updates as appropriate, and describe the measures for handling and disposal all wastes generated at the site, including clearing and demolition debris or other waste soils removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste. Refer also to ACGP Parts 4.8.3 Staging and Material Storage Areas, and 4.8.6 Storage, Handling, and Disposal of Construction Waste.

Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or groundwater.

The contractor must establish proper building and material storage areas to avoid pollutants coming in contact with rainfall or flowing storm water. Any materials that have the potential to pollute storm water will be covered to prevent rainfall from coming into contact with them. Garbage containers will be covered to prevent debris from blowing away as well. Any contractor supplied staging area must be included in inspections and the SWPPP. No materials will be staged or stored, even temporarily in flowing water.

The contractor should designate a waste collection area on site that does not receive substantial amount of runoff from upland areas and does not drain directly to a water body.

BMP Description: Sanitary/Septic Waste Management, WM-9	
BMP Manual/Publication: Caltrans Construction Site BMP Manual, March 2003	
<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Install at least 50 feet from receiving water bodies and wetlands.
Maintenance and Inspection:	<u>Inspection:</u> Inspect to make sure waste containers are being maintained often enough to prevent overflow. <u>Maintenance:</u> Make repairs if any conditions noted under inspection are found.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor
BMP Description: General Construction Site Waste Management (Pg. 4-62)	
BMP Manual/Publication: Alaska Department of Environmental Conservation, Alaska Storm Water Guide, December 2011	
<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Continuously during construction activities.
Maintenance and Inspection:	<u>Inspection:</u> Inspect storage and use areas and identify containers or equipment that could malfunction and cause leaks or spills. Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness. <u>Maintenance:</u> Immediately repair or replace any that are found to be defective.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor
BMP Description: BMP C153: Material Delivery, Storage and Containment	
BMP Manual/Publication: Washington State Department of Ecology, Stormwater Management Manual for Western Washington, Volume II – Construction Stormwater Pollution Prevention, December 2014	
<input type="checkbox"/> Permanent	<input checked="" type="checkbox"/> Temporary
Installation Schedule:	Continuously during construction activities.
Maintenance and Inspection:	Inspections performed a minimum of weekly and after significant rainfall. <ul style="list-style-type: none"> • Temporary storage areas should be located away from vehicular traffic, near the construction entrance(s), and away from waterways or storm drains. • Material Safety Data Sheets (MSDS) should be supplied for all materials stored. • Chemicals, drums, or bagged materials should not be

	<p>stored directly on the ground. Place these items on a pallet, and, when possible, store within secondary containment.</p> <p>Keep material storage areas clean, organized, and equipped with an ample supply of appropriate spill clean-up material (spill kit).</p>
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

11.0 INSPECTIONS (5.4; 6.0)

Minimum requirements for the locations and scope of site inspections are described in the ACGP Part 6.4.

Inspection requirements for linear projects are described in the ACGP Part 6.5.

Describe the frequency inspections will occur at your site, including any correlations to storm frequency and intensity.

Note that inspection details for particular BMPs should be included in Section 11 or Appendix B.

Location of Inspections: During a site inspection, at a minimum, inspect the following areas of the site:

- Areas of the site disturbed by construction activity (e.g., areas cleared, graded, or excavated)
- Areas used for storage of materials that are exposed to precipitation
- Areas where control measures are installed and maintained at the site
- Areas where sediment and other pollutants have accumulated or been deposited and may have the potential for or are entering the storm water conveyance system
- Locations where vehicles enter or exit the site
- Areas where stormwater typically flows, including the stormwater conveyance system
- Points of discharge from the site. Where such discharge locations are inaccessible, the nearest downstream location must be inspected to the extent that such inspections are practicable
- Portions of the site where temporary or permanent stabilization measures have been initiated

Scope of Inspections: At a minimum, the scope of the site inspection shall include the following:

- Check whether all control measures are installed and operating as intended and determine if any control measures need to be replaced, repaired, or maintained
- Check for the presence of accumulated sediment near the project area boundary that has a potential for being washed outside of the project boundary on locations such as roadways or parking lots, stormwater conveyance systems, storm drain inlets, and discharge points
- Check for the evidence of, or the potential for spills, leaks, or other accumulations or pollutants on the site entering the stormwater conveyance system or waters of the U.S.
- Describe visible areas where erosion has occurred near the project area boundary that has a potential for being washed outside of the project boundary
- Identify any locations where new or modified control measures are necessary to meet the ACGP requirements
- Identify all points where there is discharge from the site and describe the conditions that are contributing to that discharge (e.g., recent storm event with failure of a control measure)
- Any incidents of noncompliance observed and corrective actions taken

Inspection Personnel: Inspections will be conducted jointly by a qualified member of the contractor's quality control staff with CBJ personnel. The inspectors shall be knowledgeable in the principles and practice of erosion and sediment controls and possesses the skills to assess conditions at the construction site that could impact stormwater quality, and to assess the effectiveness of any sediment

and erosion control measures selected to control the quality of stormwater discharges from the construction activity. An Alaska Certified Erosion and Sediment Control Lead (AK_CESCL), Certified Professional in Erosion and Sediment Control (CPESC), Certified Erosion Sediment and Storm Water Inspector (CESSWI), Certified Inspector of Sediment and Erosion Control (CISEC), or Certified Professional in Storm Water Quality (CPSWQ) certifications are deemed to meet this requirement. A copy of the inspector's qualifications shall be included in an appendix of the SWPPP.

11.1 Inspection Schedules (5.4.1.2; 6.1; 6.2)

Refer to ACGP Part 6.1 for inspection frequency requirements.

Required inspection frequency is based on mean annual precipitation for the site. Refer to Section 3.2 for annual precipitation data and can be found in the project specifications.

A permittee must allow an authorized representative of ADEC, EPA or the MS4 operator to conduct a site inspection in accordance with the ACGP Part 6.6.

NEW: Inspection Frequency:

The inspection frequency in Central Region will now be once every seven calendar days.

Pre-construction inspection:

A pre-construction inspection should be conducted by the SWPPP preparer, the contractor, and CBJ prior to the start of construction. Document the inspection and include this pre-construction inspection form in the contractor's SWPPP.

Inspection frequency:

An inspection will be scheduled beginning less than one (1) week after land disturbance begins. Inspections will occur once every seven (7) calendar days.

Justification for reduction in inspection frequency, if applicable:

Based on Section 6.2 of the ACGP the project may reduce inspection frequency as follows:

- If the entire site is temporarily stabilized the frequency of inspections may be reduced to at least once every thirty (30) calendar days and within two business days of the end of a storm event at actively staffed sites that resulted in a discharge from the site;
- If portions of the site have achieved final stabilization, but construction activity remains on other portions of the site, inspections may be suspended for those portions that have achieved final stabilization; however, subsequent inspections may need to be conducted within two business days of the end of a storm event at actively staffed sites that results in erosion and causes a discharge from that portion of the site previously considered finally stabilized;
- If the project is undergoing winter shutdown, inspections may stop fourteen (14) calendar days after the anticipated fall freeze-up and shall resume at least twenty-one (21) calendar days prior to the anticipated spring thaw; or
- If the entire site has been finally stabilized and a NOT has been submitted, no further inspection requirements apply to the site.

As defined by the ACGP, winter shutdown means the cessation of soil disturbing or soil stabilizing construction activity for winter. Typically this period is from October/November to April/May and is approximately from Fall Freeze-up to Spring Thaw.

ACGP Definition of Fall Freeze-up: For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the fall that air temperatures will be predominately below freezing. It is the date in the fall that has an 80% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date.

ACGP Definition of Spring Thaw: For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the spring

that air temperatures will be predominately above freezing. It is the date in the spring that has a 20% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date.

These dates can be found by looking up the “Fall ‘Freeze’ Probabilities” & “Spring ‘Freeze’ Probability” for the weather station closest to the site on the website: www.wrcc.dri.edu/summary/Climsmak.html. NOTE: this estimation of “Fall Freeze-up” & “Spring ‘Freeze’” is for planning purposes only. During construction the permittee will need to maintain control measures based on actual conditions.

Estimated date of winter shutdown: This project should be completed in one construction season. In the event a winter shutdown is necessary, actual dates of shutdown shall be based on temperatures and general weather conditions. For purposes of the contractor’s SWPPP based upon this ESCP, the fall freeze-up is the date in the fall that air temperatures will be predominately below freezing and the spring thaw date is the date in the spring that air temperatures will be predominately above freezing.

Based on the Fall ‘Freeze’ Probabilities and Spring ‘Freeze’ Probabilities for the weather station closet to the project, Juneau International Airport, Alaska (504100), the estimated fall freeze-up date is **October 13** and the estimated spring thaw date is **May 19**. Winter shutdown may start on or after October 27 (14 days after the anticipated fall freeze date). Inspections shall resume on or before April 29 (21 days prior to the anticipated spring thaw date).

Fall ‘Freeze’ Probabilities (Jul. 31 - Dec. 31)

JUNEAU INTL AP, at (504100)											
Temp F	Earliest	10%	20%	30%	40%	50%	60%	70%	80%	90%	Latest
36.5	08/16	08/28	09/02	09/06	09/09	09/12	09/18	09/22	09/28	09/30	10/15
32.5	08/24	09/09	09/14	09/21	09/26	09/29	10/01	10/04	10/13	10/22	11/07
28.5	09/11	09/27	10/01	10/03	10/08	10/11	10/17	10/26	10/30	11/05	11/26
24.5	09/24	10/10	10/19	10/26	10/29	11/04	11/06	11/09	11/15	11/28	12/16
20.5	10/10	10/26	10/30	11/06	11/09	11/12	11/17	11/21	11/30	12/10	12/31

Graphic Output

- Earliest - Earliest date when a minimum temperature below the threshold occurred.
 / means there has never been a year when the minimum temperature went below the threshold temperature during the July 31 to Dec. 31 period or insufficient data to determine a date.
 07/31 means the minimum temperature can go below the threshold temperature any day during the July 31 to Dec. 31 period.
- xx% - Percent probability that a minimum temperature below the threshold will occur on or before the given date.
 / means non-occurrence of the threshold or insufficient data to determine a threshold.
- Latest - Latest date when a minimum temperature below the threshold occurred.
 / means there has been a year when the minimum temperature didn't go below the threshold temperature during the July 31 to Dec. 31 period or insufficient data to determine a date.

Western Regional Climate Center, wrcc@dri.edu

Figure 2: Juneau International Airport – Fall ‘Freeze’ Probability Table

Spring 'Freeze' Probabilities (Jan 1 - Jul 31)

JUNEAU INTL AP, at (504100)											
Temp F	Earliest	90%	80%	70%	60%	50%	40%	30%	20%	10%	Latest
36.5	04/29	05/11	05/16	05/18	05/22	05/27	05/31	06/06	06/09	06/20	07/08
32.5	04/18	04/24	05/02	05/06	05/10	05/12	05/15	05/18	05/19	05/27	06/13
28.5	02/10	04/08	04/13	04/16	04/20	04/23	04/25	04/29	05/03	05/07	05/19
24.5	02/09	03/15	03/21	03/25	03/30	04/03	04/05	04/10	04/13	04/19	04/30
20.5	01/02	02/27	03/09	03/15	03/18	03/21	03/24	03/27	04/05	04/12	04/29

Graphic Output

Earliest - Earliest date when a minimum temperature below the threshold occurred.
 / means there has been a year when the minimum temperature didn't go below the threshold temperature during the Jan. 1 to July 31 period or that there was insufficient data to determine a date.

xx% - Percent probability that a minimum temperature below the threshold will occur on or after the given date.
 / means non-occurrence of the threshold or insufficient data to determine a threshold.

Latest - Latest date when a minimum temperature below the threshold occurred.
 / means there has never been a year when the minimum temperature went below the threshold temperature during the Jan. 1 to July 31 period or insufficient data to determine a date.
 07/30 means the minimum temperature can go below the threshold temperature any day during the Jan. 1 to July 31 period.

Western Regional Climate Center, wrccl@alaska.edu

Figure 3: Juneau International Airport – Spring ‘Thaw’ Probability Table

In order to implement winter shutdown the following must be completed:

- Erosion and sediment control measures in anticipation of spring thaw must be placed
- Conveyance channels must have temporary or permanent stabilization
- Disturbed slopes, disturbed soils, and soil stock piles must have temporary or permanent stabilization
- A final inspection must be completed on or before the date above
- A memo/SWPPP amendment, to be placed in Appendix K of the contractor’s SWPPP indicating shutdown is being conducted

The inspections will be conducted jointly with Department personnel as directed by the Project Engineer. The schedule for site inspections will be established and updated daily as necessary to meet the requirements of the ACGP and provide the department with notice and opportunity to participate in the site inspection.

11.2 Inspection Form or Checklist (5.4.1.3; 6.7)

Contractor is required to provide forms in Appendix K. An Inspection Report will be completed after each inspection, identifying BMPs installed at the time of inspection, noting corrective actions required, and documenting complete-by-date for any actions discovered during the inspection. Each report will be certified by Contractor’s Superintendent and CBJ Project Engineer.

11.3 Corrective Action Procedures (5.4.1.4; 8.0)

Identify how conditions found that require corrective action will be addressed:

The following guidelines apply for setting corrective action complete-by dates as required by the ACGP:

For conditions that are easily remedied (i.e., removal of tracked sediment, maintenance of control measures, or spill clean-up), the permittee must initiate appropriate steps to correct the problem within twenty-four hours from the time of discovery and correct the problem as soon as possible; or

If installation of a new control measure is needed or an existing control measure requires significant redesign and reconstruction or replacement, the permittee must install the new or modified measure and

make it operational within seven calendar days from the time of discovery of the need for the corrective action, unless infeasible.

If a discharge occurs during a local 2-year, 24-hour storm event, a corrective action must be initiated the day after the storm event ends as described in ACGP Part 8.1.1.

For corrective actions that could affect a subcontractor, notify the subcontractor within three calendar days of taking the corrective action.

Additionally, deadlines for completion of corrective actions shall be selected to protect water quality and prior to the next storm event unless impracticable.

Corrective Action Log

The corrective action log will document the following within 24 hours of discovery of any conditions listed in ACGP Part 8.1 and include in Appendix J:

- Date the problem was identified
- Summary of corrective action taken or to be taken
- Notice of whether SWPPP modifications were required as a result of this discovery or corrective action
- Date corrective action completed and name of person completing the action

In the event there is a reason (outside of the project staff's control) that a corrective action cannot practicably be completed by the set complete-by date, the Contractor will complete a Delayed Action Item Report. This form will set a new complete-by date and document the reason that the previous date could not be met.

11.4 Inspection Recordkeeping (5.4.2)

Records (including inspection reports, corrective action logs, delayed action item reports, grading and stabilization logs, amendment logs, staff tracking logs, rainfall logs, and training logs) will be maintained for a minimum period of at least three (3) years after the permit is terminated. A hard copy and electronic copy of the final SWPPP, including all appendices, will be transmitted to CBJ when the project's NOTs are filed.

12.0 MONITORING PLAN (IF APPLICABLE) (5.5; 7.0)

12.1 Determination of Need for Monitoring Plan

Is there an EPA-established or approved TMDL for **Mendenhall Wetlands**? Yes No

Is the receiving water listed as impaired for turbidity and/or sediment? Yes No

13.0 POST-AUTHORIZATION RECORDS (5.8)

Copy of Permit Requirements (5.8.1)

The contractor's SWPPP must contain the following documents:

- copy of ACGP (5.8.1.1)
- copy of the signed and certified NOI form submitted to ADEC (5.8.1.2)
- upon receipt, a copy of letter from ADEC authorizing permit coverage, providing tracking number (5.8.1.3)

These documents must be included in Appendix F.

13.1 Additional Documentation Requirements (5.8.2)

The Grading and Stabilization Log, in Appendix G, will be filled out to satisfy the following ACGP requirements:

- Dates when grading activities occur (5.8.2.1.1)
- Description of grading activities and location (5.8.2.1.2)
- Dates when construction activities temporarily or permanently cease (5.8.2.1.3)
- Dates when stabilization measures are initiated (5.8.2.1.4)
- Description of Stabilization Measure (5.8.2.1.5)
- Date of beginning and ending period for winter shutdown (5.8.2.2)

Other documents will be included as shown below:

- Copies of inspection reports (5.4.2; 5.8.2.3; insert in Appendix K).
- Copies of monitoring reports, if applicable (5.8.2.4; 5.5.2; 9.1; insert in Appendix H).
- Documentation in support of chemical-treatment processes (4.6; 5.8.2.6; insert in Appendix P).
- Documentation of maintenance and repairs of control measures (5.8.2.8; 8.1; 8.2; insert in Appendix J).
- Copy of ADEC Letter of Non-Objection (insert in Appendix D).

13.1.1 Records of Employee Training (4.14; 5.8.2.7)

Training staff and subcontractors is an effective BMP. Document all training conducted for your staff, those with specific storm water responsibilities (e.g. installing, inspecting, and maintaining BMPs), and subcontractors. Insert Training Log forms in Appendix I.

Describe Training Conducted:

General storm water and BMP awareness training for staff and subcontractors:

During safety meetings and schedule briefings, corrective actions from the previous period will be reviewed. The contractor is encouraged to discuss timing of activities and stabilization requirements. Records of the training topics, attendees, and length must be maintained in the contractor's SWPPP.

Detailed training for staff and subcontractors with specific storm water responsibilities:

Individual(s) Responsible for Training:

Documentation of training conducted shall be recorded on a form and included in Appendix I.

14.0 MAINTAINING AN UPDATED SWPPP (5.9)

This section does not need to be filled out but is a list of reminders for the applicant.

The permittee must modify the SWPPP, including site map(s), in response to any of the following:

- Whenever changes are made to construction plans, control measures, good housekeeping measures, monitoring plan (if applicable), or other activities at the site that are no longer accurately reflected in SWPPP (5.9.1.1);
- If inspections of site investigations by staff or by local, state, tribal, or federal officials determine SWPPP modifications are necessary for permit compliance (5.9.1.2); and

- To reflect any revisions to applicable federal, state, tribal, or local laws that affect control measures implemented at the construction site (5.9.1.3).

14.1 Log of SWPPP Modifications (5.9.2)

A permittee must keep a log showing dates, name of person authorizing the change, and a brief summary of changes for all significant SWPPP modifications (e.g., adding new control measures, changes in project design, or significant storm events that cause replacement of control measures). Amendments must be approved by an AK-CESCL or equivalently certified individual and include in Appendix M. The Superintendent and the SWPPP Manager are the only persons authorized to amend the SWPPP and update the SWPPP Amendment Log.

14.2 Deadlines for SWPPP Modifications (5.9.3)

Revisions to the SWPPP must be completed within seven days of the inspection that identified the need for a SWPPP modification or within seven days of substantial modifications to the construction plans or changes in site conditions.

15.0 ADDITIONAL SWPPP REQUIREMENTS (5.10)

15.1 Retention of SWPPP (5.10.1)

A copy of the SWPPP (including a copy of the permit), NOI, and acknowledgement letter from ADEC must be retained at the construction site.

15.2 Main Entrance Signage (5.10.2)

A sign or other notice must be posted conspicuously near the main entrance of the site. The sign or notice must include a copy of the completed NOI for both CBJ and the contractor.

15.3 Availability of SWPPP (5.10.3)

The permittee must keep a current copy of the SWPPP at the site. The SWPPP must be made available to subcontractors, government and tribal agencies, and MS4 operators, upon request.

15.4 Signature and Certification (5.10.4)

As co-permittees, the SWPPP is signed and certified by both the contractor and by CBJ. The contractor must complete a SWPPP Contractor Certification form once CBJ approves the SWPPP and include it in Appendix E. 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.

Upon approval, CBJ will provide the contractor with signed CBJ forms for the CBJ SWPPP Certification and CBJ Delegation of Authority for inclusion in Appendix E of the SWPPP.








APPENDIX A
SITE MAPS AND DRAWINGS






Juneau International Airport Runway Safety Area Improvements Phase 2B: Site Map

ESCP NOTES:

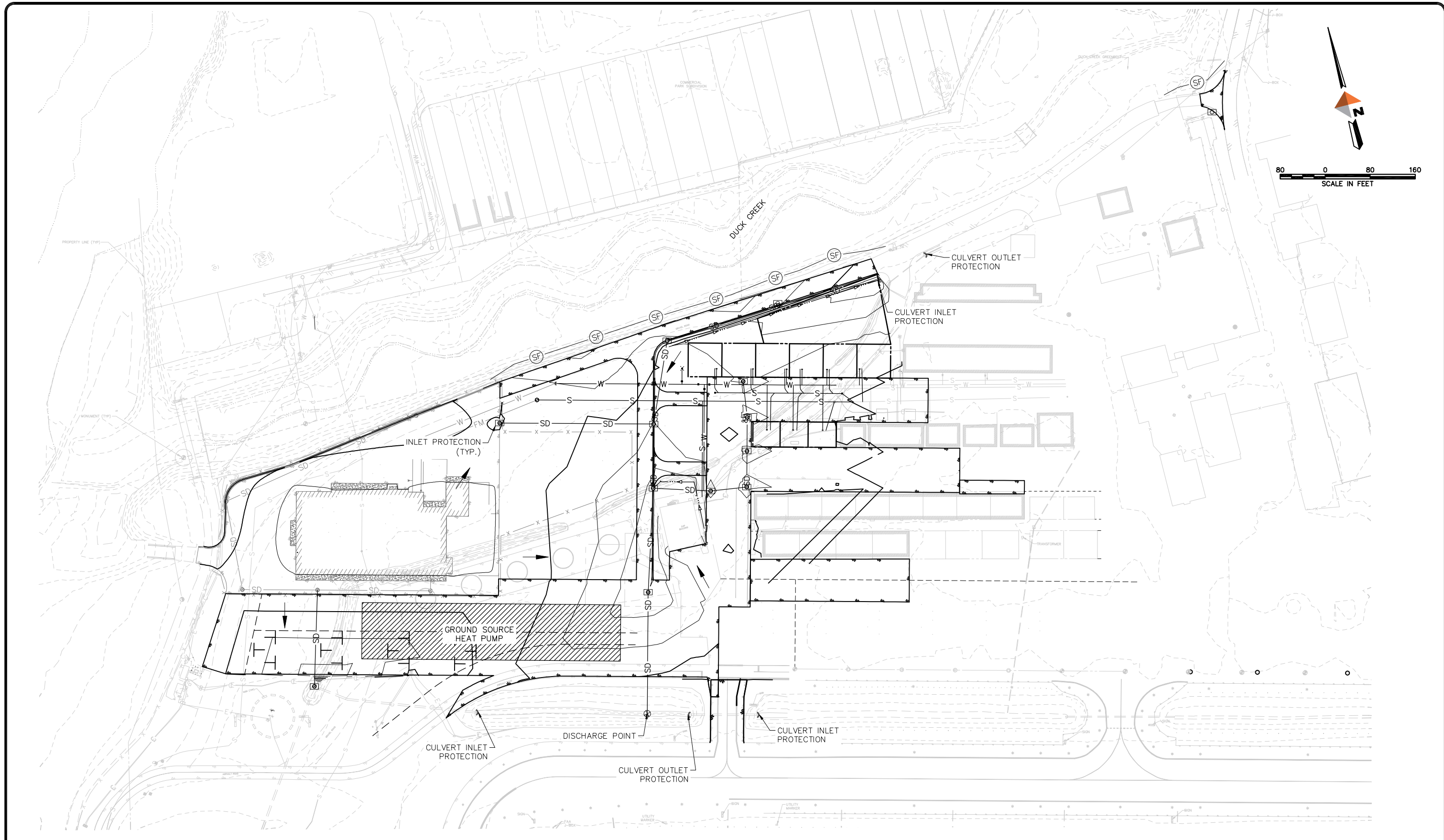
1. REFER TO ESCP REPORT FOR EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPS).
2. THE ESCP SHEETS ARE NOT A COMPREHENSIVE REPRESENTATION OF ALL BMPS REQUIRED TO MAINTAIN COMPLIANCE WITH THE CONSTRUCTION GENERAL PERMIT (CGP). BMPS SHOWN ON THE ESCP SHEETS ARE ONLY A STARTING POINT FOR THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING ANY ADDITIONAL BMPS TO ACCOUNT FOR THEIR PHASING AND METHODS OF CONDUCTING WORK.
3. CONTRACTOR SHALL UTILIZE BMPS MOST APPROPRIATE FOR CONDITIONS ON-SITE. IF INSPECTION REVEALS EROSION CONTROL MEASURES ARE INEFFECTIVE, THE CONTRACTOR SHALL IMMEDIATELY IMPLEMENT CORRECTIVE ACTION, AS NECESSARY, TO CORRECT THE DEFICIENCY.
4. CONTRACTOR SHALL ESTABLISH MATERIAL STORAGE AND STAGING AREAS.
5. PRESERVE EXISTING VEGETATION WHEN PRACTICAL.
6. THE CONTRACTOR SHALL USE CONTROL MEASURES TO ENSURE THAT CONSTRUCTION ACTIVITIES HAVE MINIMAL IMPACTS ON THE NATURAL BUFFER AREAS OF RECEIVING WATERS. ALL DISTURBED PROJECT AREAS ADJACENT TO IN-WATER WORK SHALL BE RESTORED TO THEIR FUNCTIONAL CAPACITY, OR PLANNED DESIGN, UNLESS DIRECTED BY THE ENGINEER.
7. ALL DISTURBED AREAS NOT RECEIVING HMA PAVEMENT, NON-ERODIBLE GRAVELS, OR RIPRAP SHALL RECEIVE TOPSOIL AND SEED AS A FINAL STABILIZATION MEASURE, UNLESS OTHER TREATMENTS ARE REQUIRED BY PERMIT CONDITIONS.
8. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES AFTER PROJECT COMPLETION.
9. THE PROJECT LIMITS ARE SURROUNDED BY NATURAL VEGETATION WHICH SERVES AS A VEGETATIVE BUFFER STRIP.
10. PROVIDE VELOCITY DISSIPATERS AT ALL DEWATERING DISCHARGE POINTS.

ESCP LEGEND	
	CULVERT INLET/OUTLET PROTECTION/FIBER ROLLS
	DISCHARGE POINT
	DITCH LINE
	FIBER ROLLS FOR EROSION AND SEDIMENT CONTROL
	INLET PROTECTION
	SILT FENCE
	SURFACE FLOW

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 Plot Date:
 Designated By: C. WILT
 Checked By: B. HANSON
 Drawn By: C. SLATTEN
 DOWI File No. 232-89

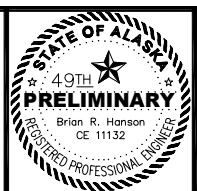
			SCALE			PLAN PREPARED BY:  #AECL848 www.dowl.com 4041 B Street Anchorage, Alaska 99503 907-562-2000		JUNEAU INTERNATIONAL AIRPORT JUNEAU, ALASKA RUNWAY SAFETY AREA IMPROVEMENTS – PHASE 2B CONTRACT NO. BE-17-045 AIP No. 3-02-0133-XXX-2016 ESCP NOTES AND LEGEND	SHEET 1 OF 3
BY	DATE	REVISIONS	HORZ. SCALE VERT. SEE GRAPHIC W.O. NO. 1123.62033 FILE NO.						


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 Script File:
 Plot Date:
 Designed By: C. WILT
 Checked By: B. HANSON
 Drawn By: C. SLATTEN
 DOWL File No. 232-89



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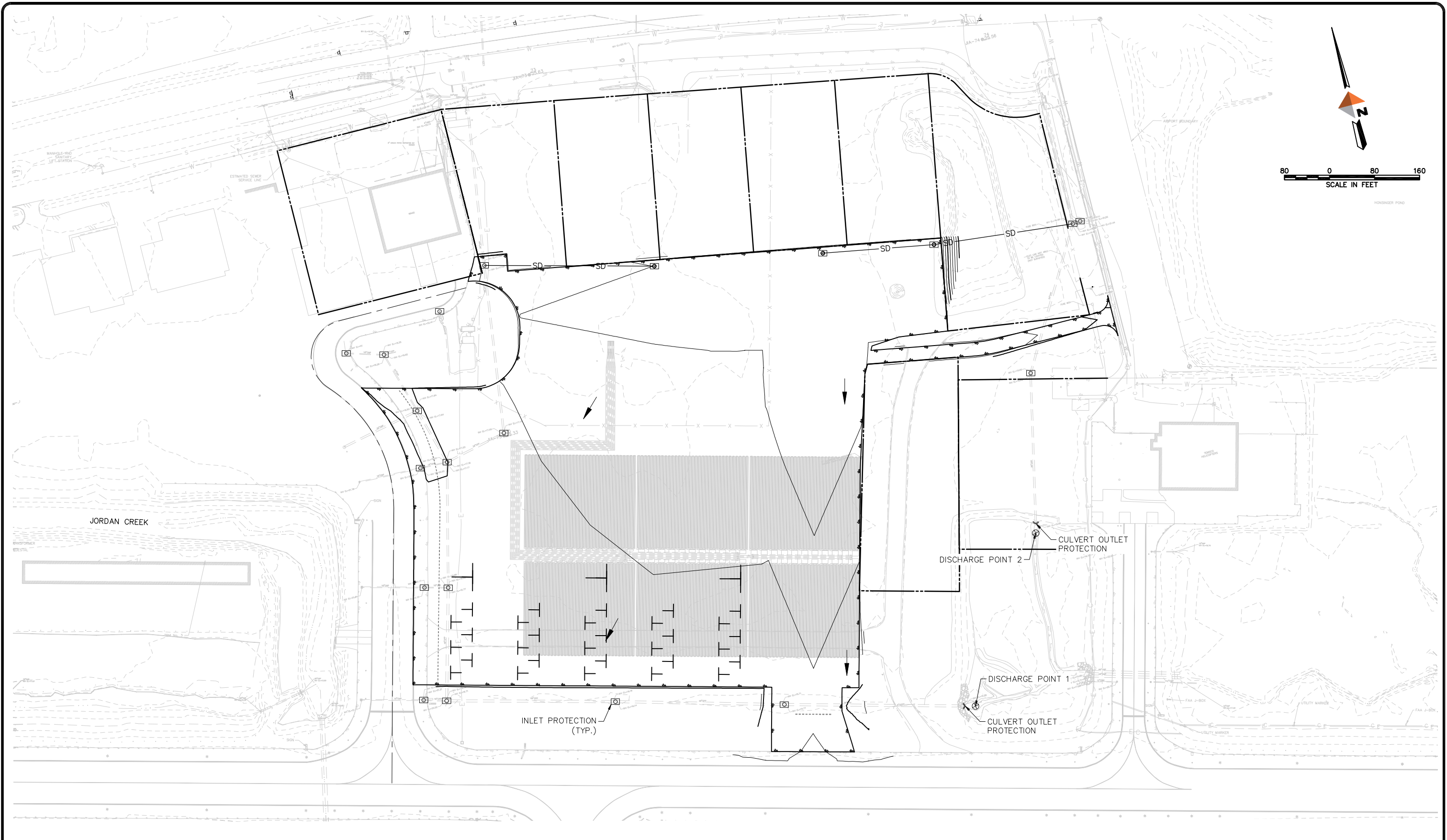
PLAN PREPARED BY:

 #AECL848 www.dowl.com
 4041 B Street
 Anchorage, Alaska 99503
 907-562-2000



JUNEAU INTERNATIONAL AIRPORT
 JUNEAU, ALASKA
 RUNWAY SAFETY AREA IMPROVEMENTS - PHASE 2B
 CONTRACT NO. BE-17-045
 AIP No. 3-02-0133-XXX-2016
 ESCP: NORTHWEST DEVELOPMENT AREA

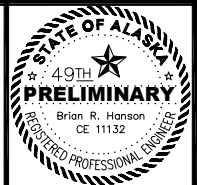
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 Designed By: B. HANSON
 Checked By: C. SLATTEN
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PLAN PREPARED BY:
DOWL
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 Anchorage, Alaska 99503
 907-562-2000



JUNEAU INTERNATIONAL AIRPORT
 JUNEAU, ALASKA
 RUNWAY SAFETY AREA IMPROVEMENTS - PHASE 2B
 CONTRACT NO. BE-17-045
 AIP No. 3-02-0133-XXX-2016
 ESCP: NORTHEAST DEVELOPMENT AREA

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APPENDIX B
BMP DETAILS

Flagging and Fencing of Clearing Limits

Flagging and fencing of clearing limits is the most positive method to ensure that the area of disturbance is controlled. As construction progresses and excavation and stockpiles occur at the site, it is easy to inadvertently expand the area of disturbance into areas to be protected without the presence of visual cues or physical barriers. Delineation of clearing limits is a temporary BMP. Figure 2A illustrates the flagging and fencing clearing limits BMP.

Selection

Flagging and fencing of clearing limits is applicable for all construction sites.

Implementation

- Designate areas of retained vegetation clearly on the plans. Required buffers should also be designated on the site design plan.
- Delineate the clearing limits with a continuous length of brightly colored tape. Support highly visible tape with vegetation or stakes, 3 to 6 feet high.
- Individual trees and shrubs that are to be preserved within the cleared area should be identified.
- If the area is to be flagged only, the flagging should be spaced no greater than 200 feet apart and closer in wooded or hilly areas.

Maintenance

- Immediately repair or replace damaged fencing or flagging necessary to ensure the area of disturbance does not enlarge should be repaired or replaced.
- Check that vandals have not moved stakes or flagging.
- Make sure that the construction is staying within the clearing limits.

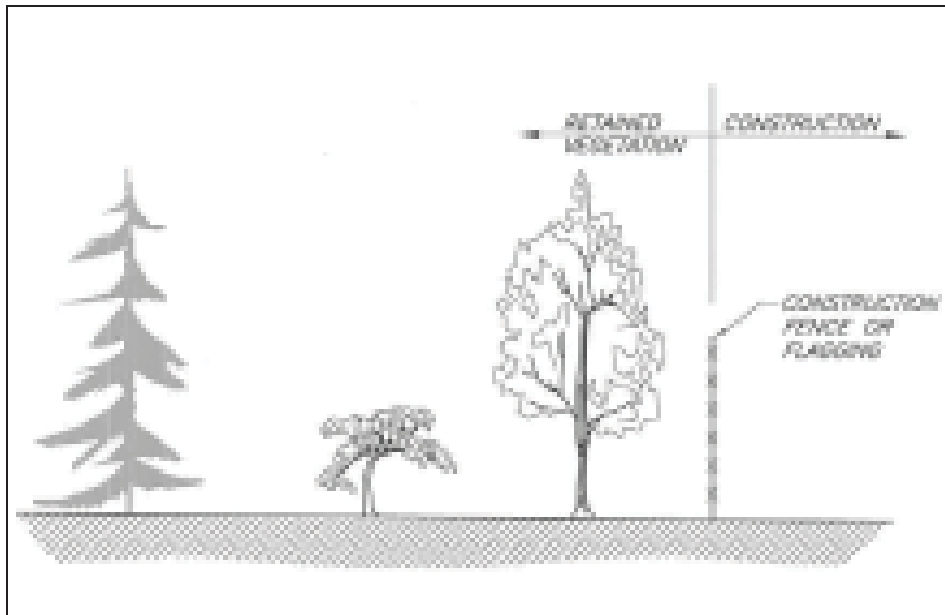


Figure 2A: Flagging and Fencing of Clearing Limits

BMP AK-1

Preservation of Existing Vegetation

Purpose and Description

- The purpose of preserving existing vegetation is to limit site disturbance and to minimize soil erosion by identifying and protecting pre-existing vegetation on the construction site.¹

Applicability

- Natural vegetation must be preserved in all areas where no construction is planned or will occur at a later date.
- Clear only land that is needed for building activities or vehicle traffic.²
- This BMP is not to supersede existing guidelines, restrictions or law, preserve vegetation as required by local governments (such as stream buffers).
- The preservation of existing vegetation is an applicable practice in all regions and climates in Alaska.

Design and Installation

- Before any clearing begins, vegetation selected for preservation must be clearly marked with established barriers.³ These barriers must be about 1 meter in height, must be highly visible and be anchored by wood or metal fence posts at spacing and depth that will adequately support the fence for the entirety of the project.¹

- A site map must be prepared clearly outlining all areas of vegetation that is to be preserved.²
- Vehicle traffic, equipment storage and parking shall be kept away from these areas to prevent soil and root compaction.¹
- Ground disturbance must be kept from these areas at least as far out as the leaf drip line.³
- Maintain pre-existing irrigation systems that may supply water to vegetation selected for preservation.¹
- To increase chances of survival it is best to limit grade changes in these areas and areas within the drip line.³

Maintenance and Inspection

- Repair or replace damaged vegetation immediately.²
- Inspect preservation areas regularly, if barrier has been removed or visibility reduced repair or replace barrier so that visibility is restored.³
- If roots are exposed or damaged, prune ends just above damage with pruning shears or loppers and recover with native soil.³

References

¹Caltrans Storm Water Quality Handbooks, March 2003, Construction Site Best Management Practices Manual, SS-2 Preservation of Existing Vegetation, [Uhttp://www.dot.ca.gov/hq/construc/stormwater/CSBMPM_303_Final.pdf](http://www.dot.ca.gov/hq/construc/stormwater/CSBMPM_303_Final.pdf)

(Continued on next page)

²USEPA (United States Environmental Protection Agency), October 2000, National Menu of Best Management Practices, Preserving Natural Vegetation,
<http://cfpub.epa.gov/npdes/stormwater/measureofbmps/index.cfm?action=browse&Rbutton=detail&bmp=34&minmeasure=4>

³Washington State Department of Ecology, February 2005, Storm Water Management Manual for Western Washington, Construction Storm Water Pollution Prevention, BMP C101: Preserving Natural Vegetation,
<http://www.ecy.wa.gov/pubs/0510030.pdf>

BMP AK-5

Outlet Protection

Objectives and Applications

An outlet protection is a structure designed to control erosion at the outlet of a pipe by reducing flow velocity and dissipating flow energy.

This measure should be used where the discharge velocity of a pipe exceeds the tolerances of the receiving channel or disposal area. To prevent scour and undermining, an outlet protection structure is needed to absorb the impact of the flow and reduce the velocity to non-erosive levels. A riprap lined apron is the most commonly used practice for this purpose because of its low cost and ease of installation. Designs will vary based on discharge specifics and receiving stream conditions. Outlet Protection may be temporary or permanent.

Common Failures - Generally due to faulty design, installation or maintenance.

- Inadequate apron length, resulting in scouring
- Riprap rock that is too small for runoff velocities

Other Considerations

- The riprap apron should be extended downstream until stable conditions are reached even though this may exceed the length calculated for design velocity control
- If the pipe discharges into a well defined channel, the side slopes of the channel shall not be steeper than 1:2 (horizontal:vertical)
- Riprap stilling basins or plunge pools should be considered in lieu of aprons where pipe outlets are perched or where high flows would require excessive apron length. Design guidelines for stilling basins can be found in Hydraulic Design of Energy Dissipators for Culverts and Channels, Hydraulic Engineering Circular No. 14, USDOT, FHWA (1983).

Relationship to Other ESC Measures

Outlet protection may be installed at the discharge points of grassed waterways or swales, storm water conveyance channels, sediment basins, and wet ponds.

Alternate Sediment Control Measures

Other structural energy dissipators, such as riprap stilling basins, baffle wall basins or T-fitting on the end of corrugated metal pipe.

Other Names

Stabilized Outlet.

Design

Capacity: *2 year peak runoff or the design discharge of the water conveyance structure, whichever is greater. Determine the maximum allowable velocity for the receiving stream, and design the riprap apron to reduce the flow to this velocity*

Apron Length: *The apron length shall be six times the diameter of the outlet pipe.*

Apron Width: *The apron width shall be four times the diameter of the outlet pipe.*

Materials: *The apron should be lined with riprap. The riprap should consist of a well-graded mixture of stone, with larger stones predominating. The diameter of the largest stone shall be no greater than the 1.5 times the median stone size. Geotextile filter cloth shall be placed between the riprap and the underlying soil.*

Grade: *The apron shall be less than or equal to the receiving channel grade, preferably a flat (0%) slope. Steeper grades may require alternative measures such as riprap stilling basins, or other energy dissipators.*

Alignment: *The apron shall be straight throughout the entire length.*

Additional Design Guidelines: *Hydraulic Design of Energy Dissipators for Culverts and Channels, Hydraulic Engineering Circular No. 14, USDOT.*

Materials

Rock riprap; geotextile filter cloth.

Installation

Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan.

Compact any fill required in the subgrade to the density of the surrounding undisturbed material. The riprap must conform to the specified grading limits shown on the plan. Filter cloth must meet the design requirements and be properly protected from punching or tearing during installation.

Riprap may be placed by equipment, but take care not to damage the filter cloth. Ensure that the riprap consists of a well-graded mixture of stones. The diameter of the largest stone should be no greater than 1.5 times the median stone size. The minimum thickness of the riprap apron should be 1.5 times the maximum stone diameter. Riprap may be field stone or rough quarry stone, and should be hard, angular, weather resistant, and well graded. Make the top of the riprap at the downstream end level with the receiving area or slightly below it. Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron. Stabilize all disturbed

areas with vegetation immediately after construction.

Inspection

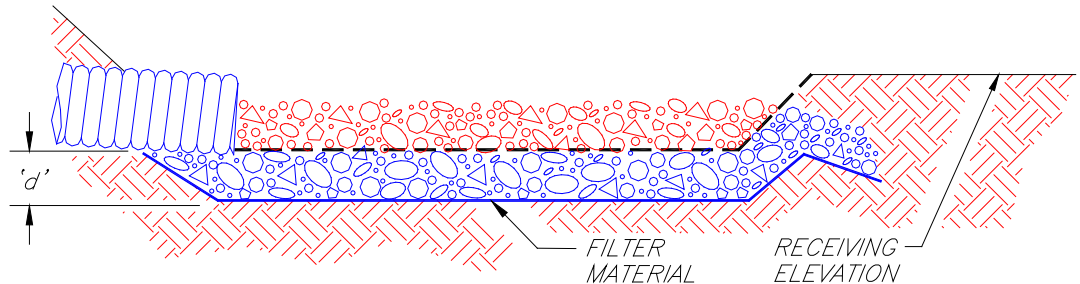
Inspect outlet protection weekly and after heavy rains to look for erosion around or below the riprap, dislodged stones, and scouring. Outlet protection should also be monitored for sediment accumulation filling the voids between rocks.

Maintenance

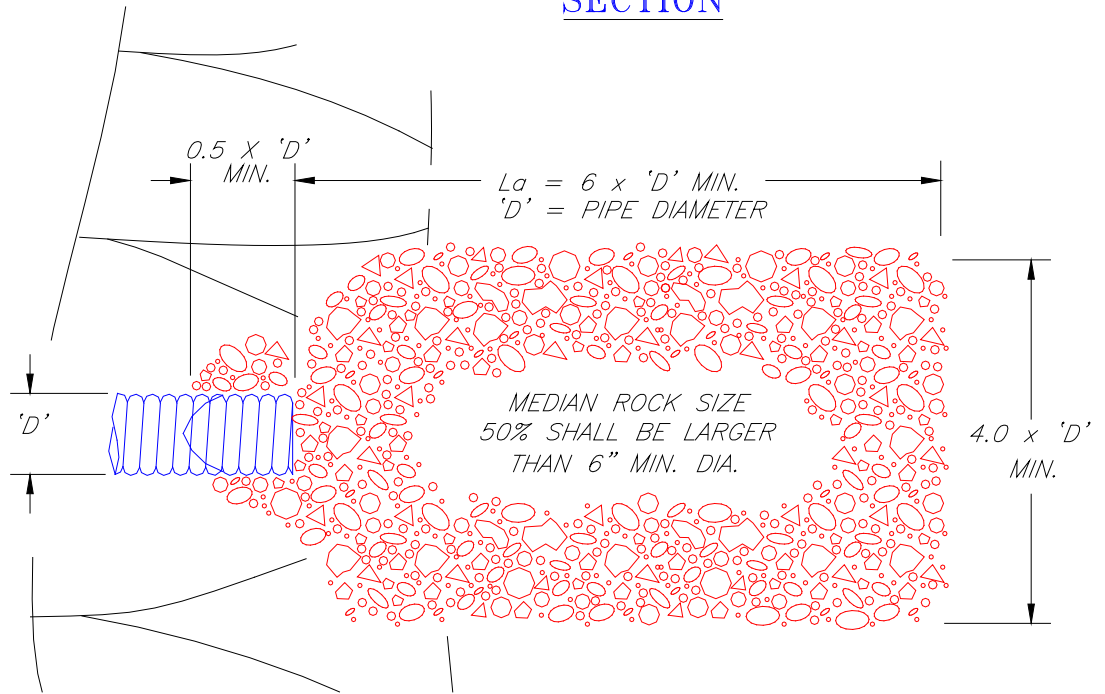
Make immediate repairs if any conditions noted under inspection are found. Sediment should be removed when it fills the voids between rocks.

Removal

Restore ground to existing or constructed grade. Revegetated measures may be left in place only if specifications specifically allow it.



SECTION



PLAN

NOTES:

1. $'La'$ = LENGTH OF APRON. DISTANCE $'La'$ SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" THICK MINIMUM GRADED GRAVEL LAYER.

© 1994 JOHN McCULLAH

FILE: ENRGYDIS

OUTLET PROTECTION

BMP AK-9

Mulching

Objectives and Applications

Mulching is the application of a uniform protective layer of straw, wood fiber, wood chips, or other acceptable material on or incorporated into the soil surface of a seeded area to allow for the immediate protection of the seed bed.

The purpose of mulching is to protect the soil surface from the forces of raindrop impact and overland flow, foster the growth of vegetation, increase infiltration, reduce evaporation, insulate the soil, and suppress weed growth. Mulching also helps hold fertilizer, seed, and topsoil in place in the presence of wind, rain, and runoff, and reduces the need for watering. Mulching may be utilized in areas that have been seeded either for temporary or permanent cover.

Mulches include straw, hay, wood fiber, paper fiber, wood/ paper fiber blends, peat moss, wood chips, bark chips, shredded bark, manure, compost and corn stalks. This type of mulch is usually spread by hand or by machine (mulch blower) after seed, water, and fertilizer have been applied. Soil binders or tackifiers, composed of a variety of synthetic and organic materials, including emulsions or dispersions of vinyl compounds, rubber, asphalt, or plastics mixed with water are often added to commercial mulch products. Tackifiers aid in the stabilization process, and are not used as a mulch alone, except in cases where temporary dust and erosion control is required. Hydroseeding, sometimes referred to as hydromulching, consists of mixing a tackifier, specified organic mulch, seed, water, and fertilizer together in a hydrosラリー and spraying a layer of the mixture onto a surface or slope with hydraulic application equipment. The choice of materials for mulching should be based on soil conditions, season, type of vegetation, and the size of the area.

Common Failures - Generally due to faulty installation or maintenance.

- Mulches are not properly watered after application, resulting in drying out and possible blowing or washing away of materials.
- Depth of mulching material is either insufficient or excessive, resulting in low seed germination rates.
- Hydroseeding slurry not applied uniformly,

resulting in spotty germination and inadequate ground cover.

Other Considerations

- Mulch should be applied immediately after seeding to improve seed germination.
- Hydroseeding can be performed in one step, and is effective provided that materials are properly mixed and equipment is in good working order.
- Depth of the applied mulch should be not less than 1 in. and not more than 2 in.
- Chemical soil stabilizers or soil binders, when used alone, are less effective than other types of mulches. These products are primarily useful for tacking organic mulches.
- A tackifier should be used in conjunction with seeding, fertilizing, and mulching or hydroseeding on any slopes steeper than 3:1.
- Check labels on chemical mulches and binders for environmental concerns. Take precautions to avoid damage to fish, wildlife, and water resources.
- Some materials such as wood chips may absorb nutrients necessary for plant growth.

Relationship to Other ESC Measures

Mulching may be performed in conjunction with seeding, fertilizing, surface roughening, and grading practices. Concentrated flows of runoff should be directed away from mulched areas.

Alternate Sediment Control Measures

Erosion Control Blankets; Sodding

Other Names

Hydromulching; Chemical Stabilization

Design

Design life: 1 season (6 months) or less

Site applicability: Areas which have been disturbed and require temporary or permanent cover

Materials and application rates: *as per Section 619 and Section 727 of Alaska Standard Specifications for Highway Construction, and Special Provisions for project*

Materials

Most Commonly Specified Mulches – Wood Fiber, Paper Fiber, Wood/Paper Fiber Combination Blends, Peat Moss

Other Mulches – Straw, Hay, Wood Chips, Bark Chips, Shredded Bark, Corn Stalks, Compost, Manure

Tackifiers – Vinyl Compounds, Rubber, Asphalt, or Plastics mixed with water

Installation

Complete the required grading as shown on the plans and ensure that erosion control measures intended to minimize runoff over the area to be mulched are in place. Apply mulch at the rates specified in the special provisions either by hand or by machinery immediately after the seed and fertilizer have been applied (two step method), or as part of the hydroslurry incorporating seed, fertilizer, mulch, and water (one step method). Apply specified tackifier if not already incorporated into the mulch matrix or hydroslurry. Provide additional watering as specified to ensure optimal seed germination conditions.

Inspection

Inspect all mulches weekly, and after each rainstorm to check for rill erosion, dislocation, or failure.

Maintenance

Replace mulch that has been loosened or dislodged. In addition, reseed areas if necessary. Water mulched areas periodically to ensure that moisture content will be maintained and seed germination and grass growth will continue.

Removal

Mulching is usually left in place to naturally decompose and become part of the soil structure.

BMP AK-19

Inlet Protection

Objectives and Applications

Inlet protection is a temporary filtering measure placed around a drop inlet or curb inlet to trap sediment and prevent the sediment from entering the storm drain system.

This measure is employed where storm drain inlets are to be made operational before permanent stabilization of the disturbed area, where a permanent storm drain structure is being constructed on site and there is potential for sediment accumulating in an inlet, and where ponding of storm water around the inlet structure could be a problem to the traffic on site. There are several types of sediment filters applicable for different conditions keeping in mind whether traffic will be present; some of these are:

Catchbasin insert: a “sock” or “witches hat” that fits inside the structure and filters sediment

Triangular Silt Dike: may be used to protect a drop inlet

Sand bag barrier: can be used around a curb inlet, or at a minimum, upstream of a curb inlet where traffic won't drive on them

Filter fabric fence : applicable to drop inlets with flows 0.5 cfs or less, and flat grades (5 % or less).

Block and gravel filter : applicable to drop and curb inlets with flows 0.5 cfs or more, flat grades (5 % or less), where no construction traffic will cross over the inlet.

Gravel and wire mesh filter : applicable to drop and curb inlets with flows 0.5cfs or more, flat grades (5 % or less), where construction traffic will cross over the inlet.

Common Failures - Generally due to faulty installation or maintenance.

- Sediment accumulation – filtering capacity is reduced, resulting in ponding of water
- Improper installation, resulting in sediment bypassing filter and entering storm drain
- Tearing, undermining, or collapsing of filter fabric, resulting in sediment entering storm drain

Other Considerations

Inlet protection should be constructed in a manner that will facilitate cleanout and disposal of trapped sediment.

- Inlet protection should be constructed in a manner that will minimize ponding of storm water around the structure.
- Straw bale barriers should not be used for inlet protection because they are not effective.

Relationship to Other ESC Measures

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. Erosion control must be in place to minimize the amount of sediment that must be treated at inlets.

Alternate Sediment Control Measures

Runoff from areas exceeding 1.0 acre or where grade is greater than 5% may require routing through a temporary sediment trap or sediment pond.

Other Names

Storm Drain Inlet Protection, Filter Inlet

Design

Drainage Area: *Not to exceed 1.0 acre*

Slope Gradient: *Not to exceed 5 %. For filter fabric fence designs, the area immediately surrounding the inlet should not exceed 1%. Gravel filters may be more appropriate for steeper slopes.*

Sediment Trapping Sump: *Where possible, a sump 12 in. – 20 in. measured from the crest of the inlet should be excavated. Side slopes should be 2:1. The recommended volume of excavation is 35 cubic yards/acre of disturbed ground.*

Orientation: *The longest dimension of the basin should be oriented toward the longest inflow area.*

Materials

Catch basin insert: should be designed by the manufacturer for use at construction sites

Triangular Silt Dike -- is a geotextile encased urethane foam, with an apron; use staples according

to the manufacturer recommendations

Sand bag barrier – bags should be about 2/3 full

Filter fabric fence – filter fabric (extra strength, filtering capacity 75 % minimum, meeting AASHTO Specification M 288 For Temporary Silt Fence); wooden stakes 2 in. x 4 in. – minimum length 3 ft.; heavy duty wire staples 1/2 in. long; washed gravel 3/4 in. – 1 1/4 in., with less than 5% fines.

Gravel and wire mesh filter - hardware cloth or wire mesh with 1/2 in. openings; filter fabric (AASHTO M 288); washed gravel 3/4 in. – 4 in. in diameter.

Installation

Catch basin insert: the filter is inserted just below the grating; manufacturer's have different design details

Triangular silt dike -- can be used on soil with wire staples or on pavement with adhesive

Sand bag barrier – place the bags in a horseshoe shape around the curb inlet or in sets of two or more upstream in the flow line to result in ponding (bag must be lower than the top of the curb)

Filter fabric fence – Place a stake at each corner of the inlet no more than 3 ft. apart. Drive stakes into the ground a minimum of 12 inches. For stability, install a frame of 2 in. x 4 in. wood strips around the top of the overflow area. Excavate a trench 8 in. wide x-12 in. deep around the outside perimeter of the stakes. If a sediment trapping sump is being provided, then the excavation may be as deep as 20 inches. Staple the filter fabric to the wooden stakes with heavy duty staples; ensure that 32 in. of filter fabric extends at the bottom so it can be formed into the trench. Place the bottom of the fabric into the trench - backfill with washed gravel all the way around.

Block and gravel filter – Secure the inlet grate to prevent seepage. Place wire mesh over the inlet so that it extends 12 in. - 20 in. beyond the inlet structure. Place filter fabric (optional) over the mesh and extend it 20 in. beyond the inlet structure. Place concrete blocks over the wire mesh or filter fabric in

a single row lengthwise on their sides, with the open ends of the blocks facing outward, not upward; ensure that adjacent ends of blocks abut. For curb inlet applications, cut a 2 in. x 4 in. wood stud the length of the curb inlet plus the width of the two end blocks and place the stud through the outer hole of the end blocks to keep the blocks in place. Place wire mesh over the outside of the vertical face (open end) of the blocks to prevent gravel from being washed through the blocks. Place gravel against the wire mesh to the top of the blocks.

Gravel and wire mesh filter – Secure the inlet grate. Place wire mesh over the inlet so that the mesh extends 12 in. beyond each side of the inlet structure. Place filter fabric over the mesh, extending it 20 in. beyond the inlet structure. Place washed gravel over the fabric/wire mesh to a depth of 12 inches.

Inspection

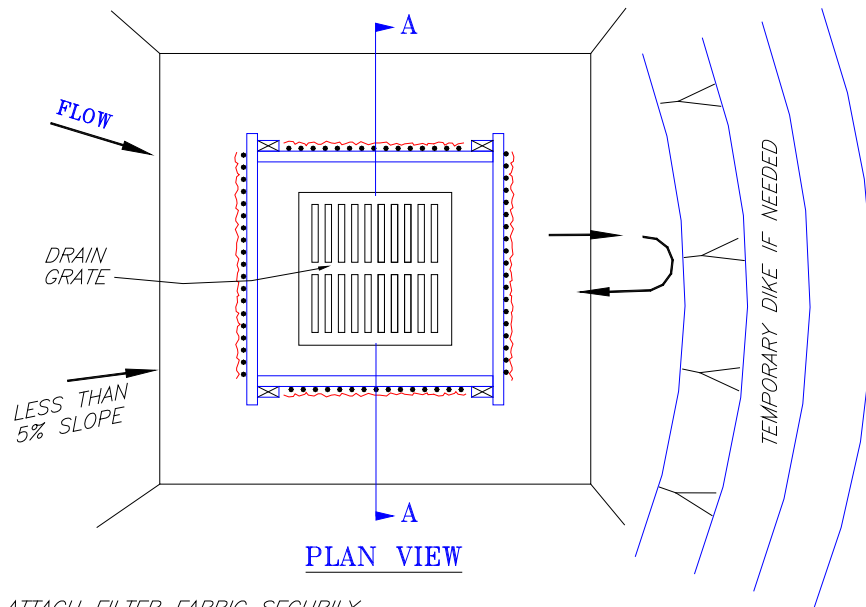
Inspect inlet protection regularly and after every storm to look for sediment accumulation and structural damage. All of the methods described are prone to plugging.

Maintenance

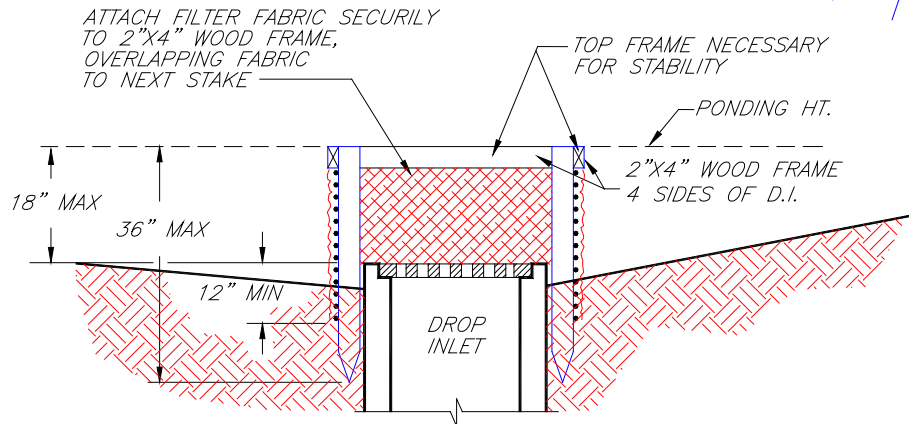
All of the methods described are maintenance-intensive. For inserts, carefully remove the insert to avoid spilling sediment, clean away from any drainages and replace it. For above-ground structures, remove sediment and restore structure to its original dimensions when sediment has accumulated to 1/2 the design depth. On gravel and mesh designs, clean (it is easier to remove and replace) the gravel filter or filter fabric if it becomes clogged. Repair any structural damage immediately.

Removal

Remove the filter material and support structures after the drainage areas have been completely stabilized. Remove or stabilize trapped sediment. Stabilize disturbed soil areas resulting from removal.



PLAN VIEW



SECTION A-A

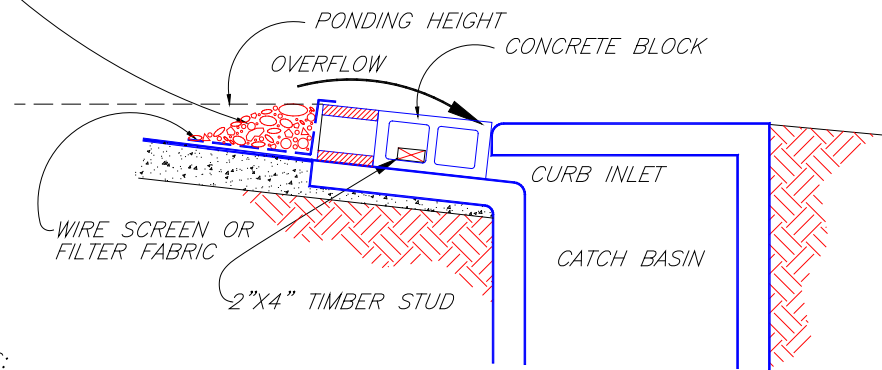
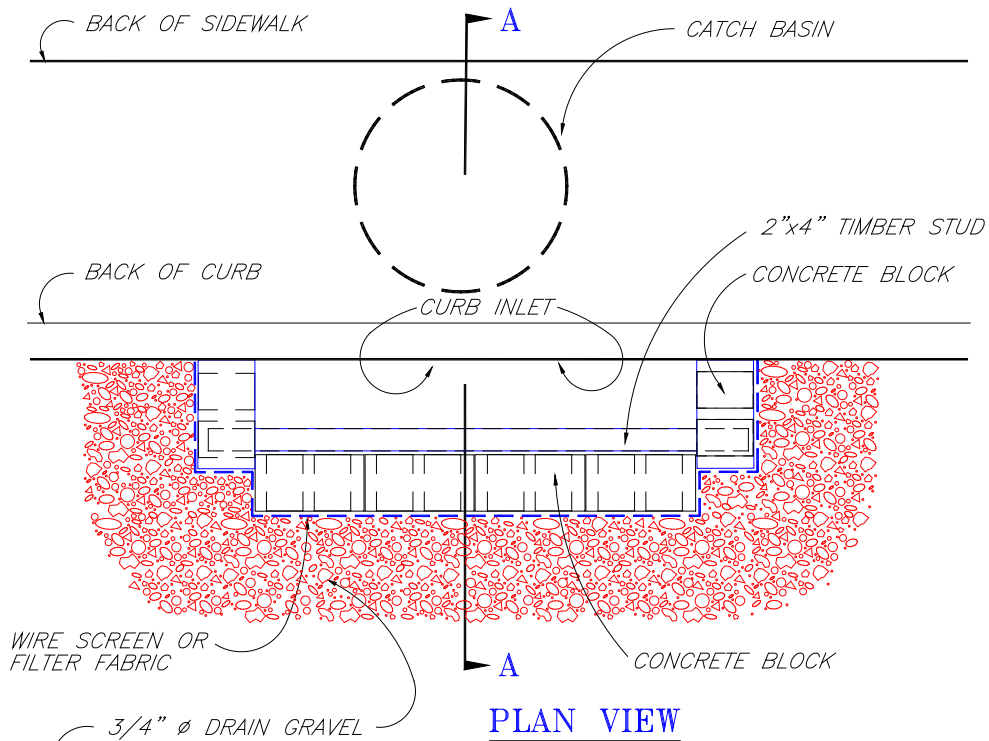
NOTES:

1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. USE 2"x4" WOOD OR EQUIVALENT METAL STAKES, 3' MINIMUM LENGTH.
3. INSTALL 2"x4" WOOD TOP FRAME TO INSURE STABILITY.
4. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

NOT TO SCALE

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FILE: SILTFDIB

INLET PROTECTION



NOTES:

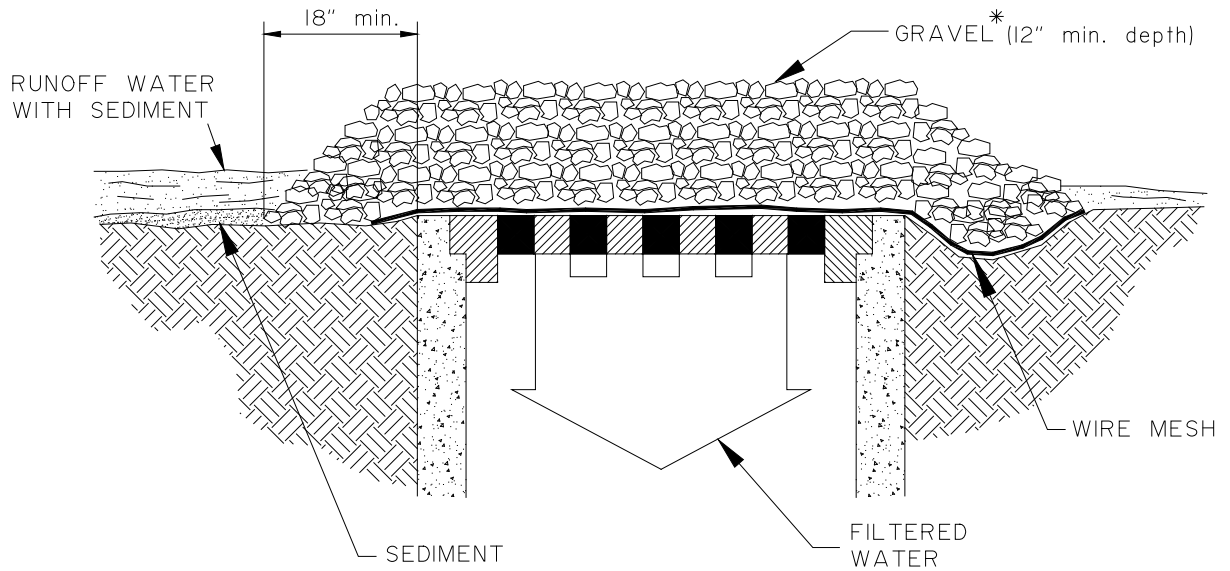
1. USE BLOCK AND GRAVEL TYPE SEDIMENT BARRIER WHEN CURB INLET IS LOCATED IN GENTLY SLOPING STREET SEGMENT, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. BARRIER SHALL ALLOW FOR OVERFLOW FROM SEVERE STORM EVENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

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FILE: BLCKCURB

SECTION A - A

INLET PROTECTION



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

INLET PROTECTION

BMP AK-23
Vehicle and Equipment Maintenance

Purpose and Description

- Vehicle and equipment cleaning areas, procedures and practices are designed to minimize or prevent discharge of pollutants and hazardous wastes into water courses and/or storm drain systems.¹

Applicability

- Procedures and practices are used everywhere that onsite maintenance and washing takes place.
- When practical, maintenance must be done offsite.

Design and Installation

- When vehicle and equipment maintenance cannot be done offsite or within a structure equipped with proper containment and disposal facilities¹ it must be done at an onsite maintenance area with the following characteristics:
 - Located at least 50ft from any downstream drainages or waterbodies.
 - Protected from storm water run-on and run-off by diversion dikes or berms which are configured to contain spills and pollutants.
 - Have drip pans, absorbent pads and spill kits on site.
 - Absorbent pads, contaminated soil, or any other waste product produced by vehicle or equipment maintenance operations must be disposed of properly.

- Fuels and lubricants must not be dumped on the ground.¹
- Tires must not be buried.¹
- Batteries must be disposed up properly or recycled.¹
- No liquids (oil, fuel, anti-freeze, etc...) will be poured or otherwise go into a storm drain system. They must be disposed of per manufacturer's instructions.²
- Secondary containment is required when storing oil, fuel and chemicals in drums onsite.¹

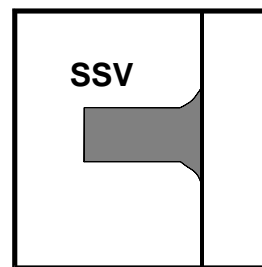
Maintenance and Inspection

- Any vessel used to store waste fluids must be inspected regularly and maintained in a leak-proof condition.¹
- Inspect construction vehicles and equipment daily and immediately fix any leaks or remove problem vehicle(s) and/or equipment from the site.²
- Maintenance area and secondary containment must be inspected regularly.

References

¹Caltrans Storm Water Quality Handbooks, March 2003, Construction Site Best Management Practices Manual, NS-10 Vehicle and Equipment Maintenance, http://www.dot.ca.gov/hq/construc/stormwater/CSBMPM_303_Final.pdf

²USEPA (United States Environmental Protection Agency), October 2000, National Menu of Best Management Practices, Vehicle Maintenance and Washing Areas at Construction Sites, <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=34&minmeasure=4>



Standard Symbol

- BMP Objectives**

 - Soil Stabilization
 - Sediment Control
 - Tracking Control
 - Wind Erosion Control
 - Non-Storm Water Management
 - Materials and Waste Management

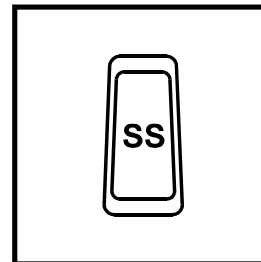
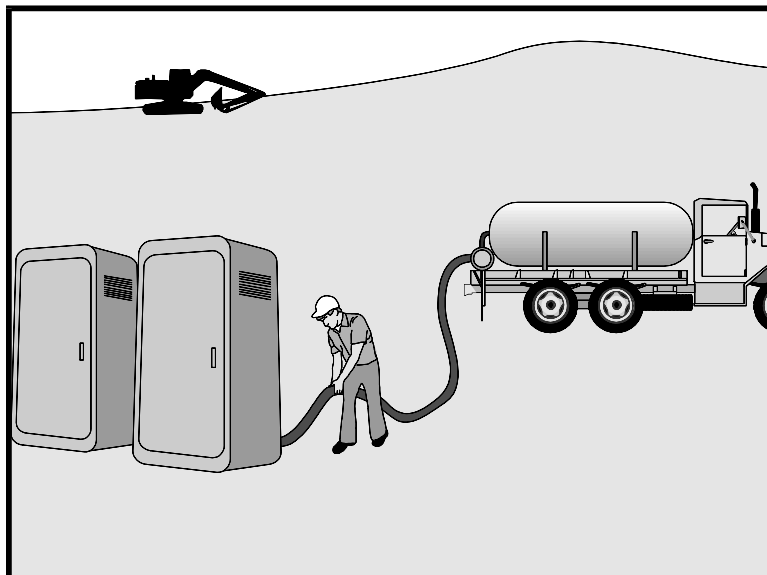
Definition and Purpose Practices to remove tracked sediment to prevent the sediment from entering a storm drain or watercourse.

Appropriate Applications These practices are implemented anywhere sediment is tracked from the project site onto public or private paved roads, typically at points of ingress/egress.

Limitations Sweeping and vacuuming may not be effective when soil is wet or muddy.

- Standards and Specifications**
- Kick brooms or sweeper attachments shall not be used.
 - Inspect potential sediment tracking locations daily.
 - Visible sediment tracking shall be swept and/or vacuumed daily.
 - If not mixed with debris or trash, consider incorporating the removed sediment back into the project.

- Maintenance and Inspection**
- Inspect ingress/egress access points daily and sweep tracked sediment as needed, or as required by the Resident Engineer (RE).
 - Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
 - Adjust brooms frequently; maximize efficiency of sweeping operations.
 - After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite in conformance with the provisions in Standard Specifications Section 7-1.13 .



Standard Symbol

BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose Procedures and practices to minimize or eliminate the discharge of construction site sanitary/septic waste materials to the storm drain system or to watercourses.

Appropriate Applications Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary/septic waste systems.

Limitations ■ None identified.

Standards and Specifications

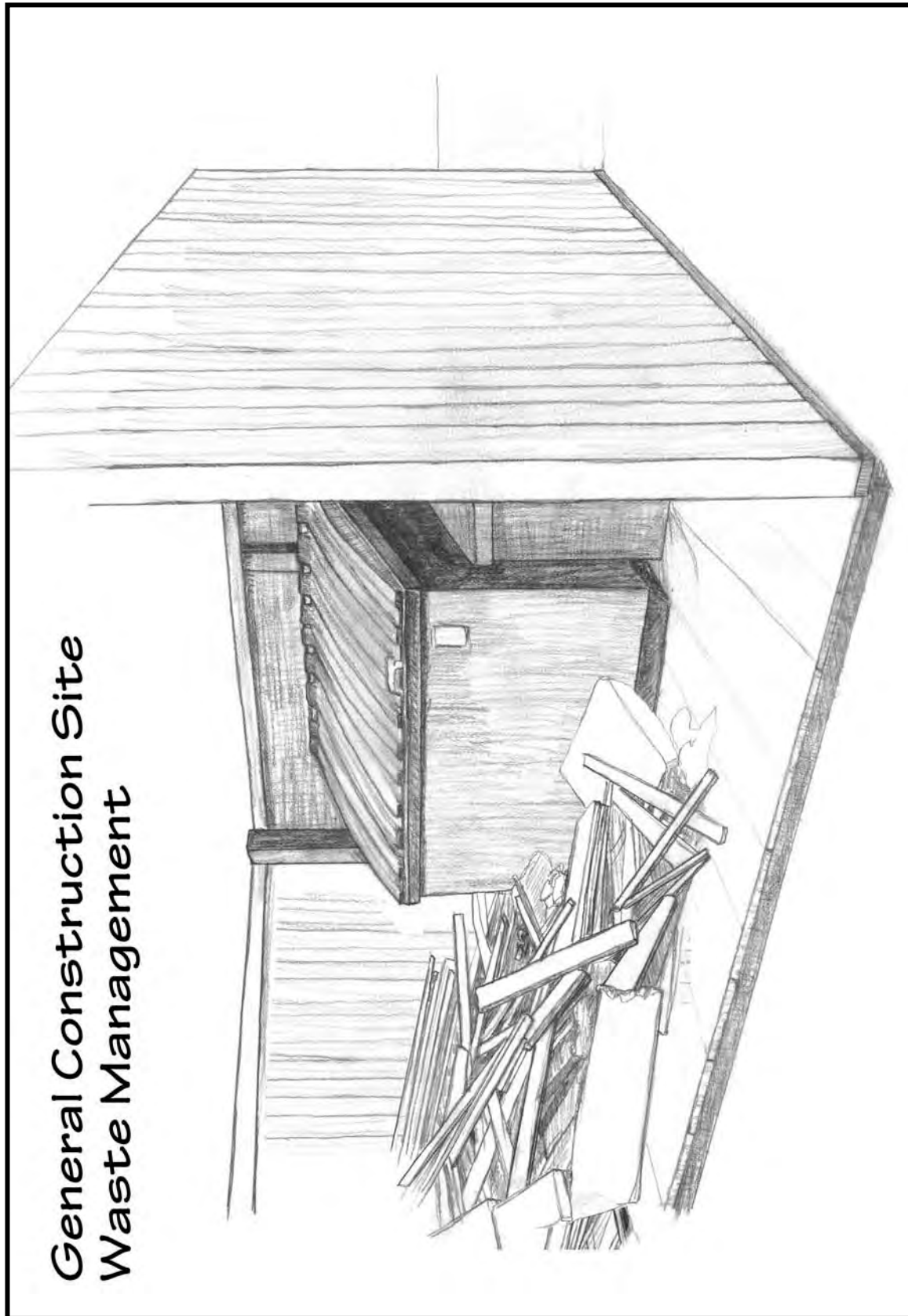
Education

- Educate employees, subcontractors, and suppliers on sanitary/septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary/septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary/septic waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Storage and Disposal Procedures

- Temporary sanitary facilities shall be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk.

- Wastewater shall not be discharged or buried within the highway right-of-way.
 - Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, shall comply with the local health agency, city, county, and sewer district requirements.
 - If using an on site disposal system, such as a septic system, comply with local health agency requirements.
 - Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges.
 - Ensure that sanitary/septic facilities are maintained in good working order by a licensed service.
 - Use only reputable, licensed sanitary/septic waste haulers.
- Maintenance and Inspection
- The Contractor's Water Pollution Control Manager (WPCM) shall monitor onsite sanitary/septic waste storage and disposal procedures at least weekly.



General Construction Site Waste Management

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
General Construction Site Waste Management Feasibility	○	○	○	○	○
Description	<p>Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or groundwater.</p>				
Installation	<p>Solid Wastes:</p> <ul style="list-style-type: none"> • Designate a waste collection area on the site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterbody. • Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible. • If secondary containment is used, include a protocol in the SWPPP and train employees on disposal of accumulated precipitation. • Schedule waste collection to prevent the containers from overflowing. • Clean up spills immediately. For hazardous materials, follow cleanup instructions on the package. Use an absorbent material such as sawdust or kitty litter to contain the spill. • During the demolition phase of construction, provide extra containers and schedule more frequent pickups. • Collect, remove and dispose of all construction site wastes at authorized disposal areas. Contact a local environmental agency to identify these disposal sites. <p>Hazardous Materials and Wastes:</p> <ul style="list-style-type: none"> • Consult with local waste management authorities about the requirements for disposing of hazardous materials. • To prevent leaks, empty and clean hazardous waste containers before disposing of them. • Never remove the original product label from the container because it contains important safety information. Follow the manufacturer’s recommended method of disposal, which should be printed on the label. • Never mix excess products when disposing of them, unless specifically recommended by the manufacturer. 				

General Construction Site Waste Management *(continued)*

<p>Installation <i>(continued)</i></p>	<p>Pesticides and fertilizers:</p> <ul style="list-style-type: none"> • Follow all federal, state and local regulations that apply to the use, handling or disposal of pesticides and fertilizers. • Store pesticides and fertilizers in a dry, covered area. • Construct berms or dikes to contain stored pesticides and fertilizers in case of spillage. • Follow the recommended application rates and methods. • Have equipment and absorbent materials available in storage and application areas to contain and clean up any spills that occur. <p>Petroleum Products:</p> <ul style="list-style-type: none"> • Store new and used petroleum products in covered areas, where practicable, and place within berms or dikes to contain any spills. • Immediately contain and clean up any spills with absorbent materials. • Have equipment available in fuel storage areas and in vehicles to contain and clean up any spills that occur. <p>Detergents:</p> <ul style="list-style-type: none"> • Use detergents only as recommended, and limit their use on the site. Do not dump wash water containing detergents into the storm drain system; direct it to a sanitary sewer or contain it so that it can be treated at a wastewater treatment plant.
<p>Maintenance</p>	<p>Inspect storage and use areas and identify containers or equipment that could malfunction and cause leaks or spills. Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness. Immediately repair or replace any that are found to be defective.</p>

Feasibility symbols:

Widely feasible

Might be feasible in certain situations

Feasible only with major design adaptation

Infeasible and not recommended

BMP C153: Material Delivery, Storage and Containment

<i>Purpose</i>	Prevent, reduce, or eliminate the discharge of pollutants to the stormwater system or watercourses from material delivery and storage. Minimize the storage of hazardous materials on-site, store materials in a designated area, and install secondary containment.
<i>Conditions of Use</i>	<p>These procedures are suitable for use at all construction sites with delivery and storage of the following materials:</p> <ul style="list-style-type: none">• Petroleum products such as fuel, oil and grease• Soil stabilizers and binders (e.g., Polyacrylamide)• Fertilizers, pesticides and herbicides• Detergents• Asphalt and concrete compounds• Hazardous chemicals such as acids, lime, adhesives, paints, solvents, and curing compounds• Any other material that may be detrimental if released to the environment
<i>Design and Installation Specifications</i>	<p>The following steps should be taken to minimize risk:</p> <ul style="list-style-type: none">• Temporary storage area should be located away from vehicular traffic, near the construction entrance(s), and away from waterways or storm drains.• Material Safety Data Sheets (MSDS) should be supplied for all materials stored. Chemicals should be kept in their original labeled containers.• Hazardous material storage on-site should be minimized.• Hazardous materials should be handled as infrequently as possible.• During the wet weather season (Oct 1 – April 30), consider storing materials in a covered area.• Materials should be stored in secondary containments, such as earthen dike, horse trough, or even a children’s wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in “bus boy” trays or concrete mixing trays.• Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, and within secondary containment.• If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.

Material Storage Areas and Secondary Containment Practices:

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be stored in approved containers and drums and shall not be overfilled. Containers and drums shall be stored in temporary secondary containment facilities.
- Temporary secondary containment facilities shall provide for a spill containment volume able to contain 10% of the total enclosed container volume of all containers, or 110% of the capacity of the largest container within its boundary, whichever is greater.
- Secondary containment facilities shall be impervious to the materials stored therein for a minimum contact time of 72 hours.
- Secondary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills shall be collected and placed into drums. These liquids shall be handled as hazardous waste unless testing determines them to be non-hazardous.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- During the wet weather season (Oct 1 – April 30), each secondary containment facility shall be covered during non-working days, prior to and during rain events.
- Keep material storage areas clean, organized and equipped with an ample supply of appropriate spill clean-up material (spill kit).
- The spill kit should include, at a minimum:
 - 1-Water Resistant Nylon Bag
 - 3-Oil Absorbent Socks 3”x 4’
 - 2-Oil Absorbent Socks 3”x 10’
 - 12-Oil Absorbent Pads 17”x19”
 - 1-Pair Splash Resistant Goggles
 - 3-Pair Nitrile Gloves
 - 10-Disposable Bags with Ties
 - Instructions

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.

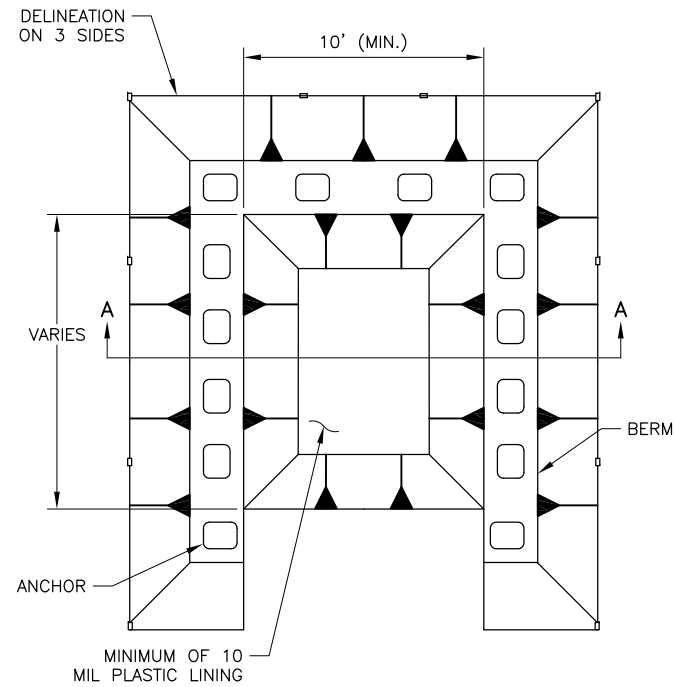
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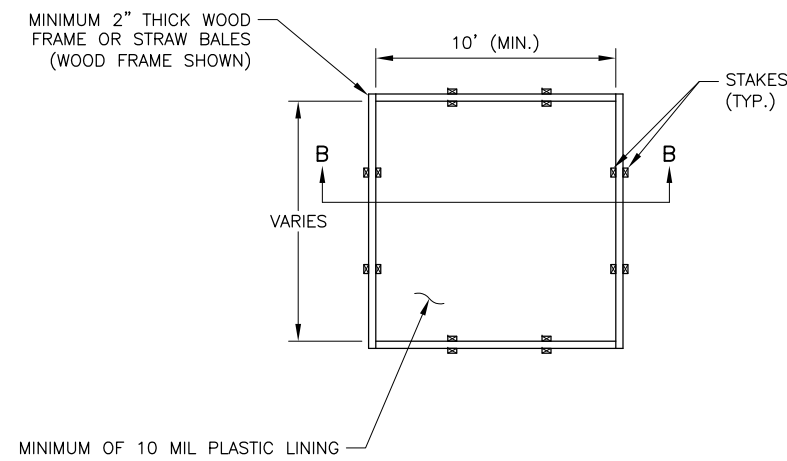
CONCRETE WASHOUT
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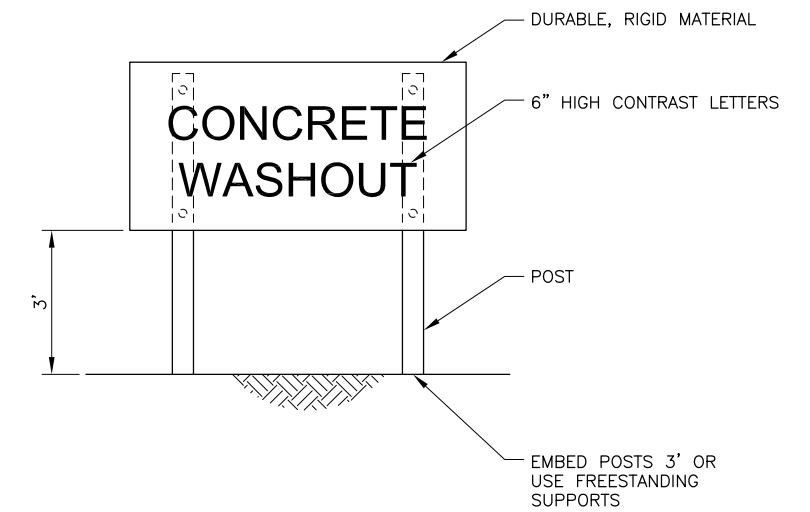
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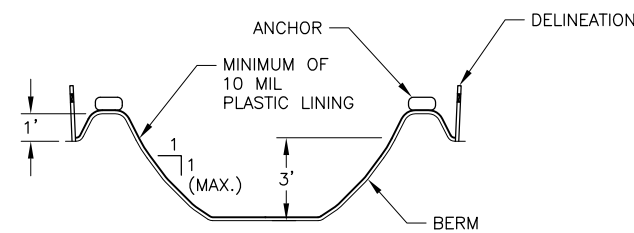
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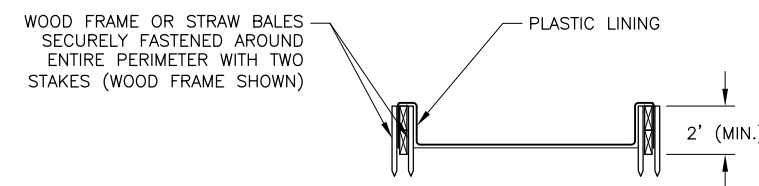
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WASHOUT SIGN
NOT TO SCALE

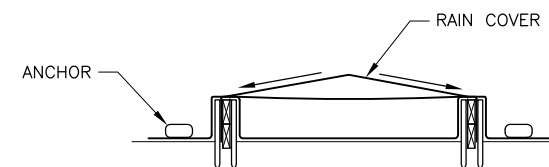


SECTION A-A



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

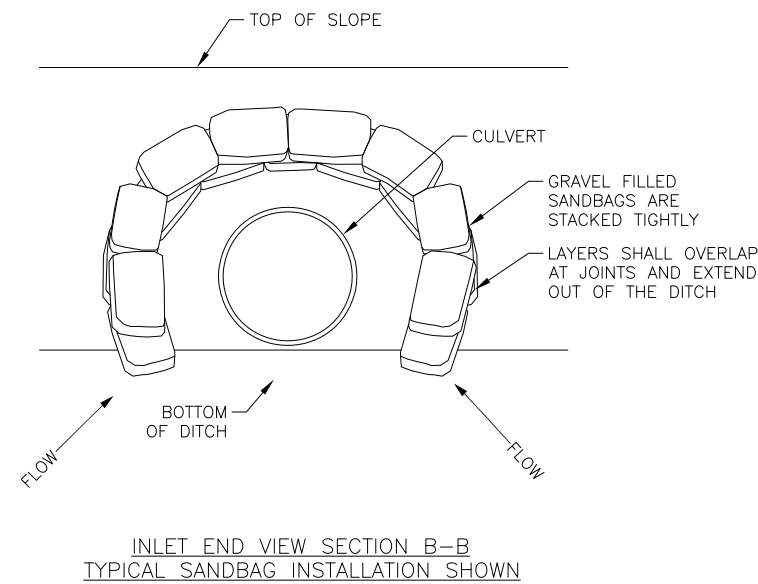
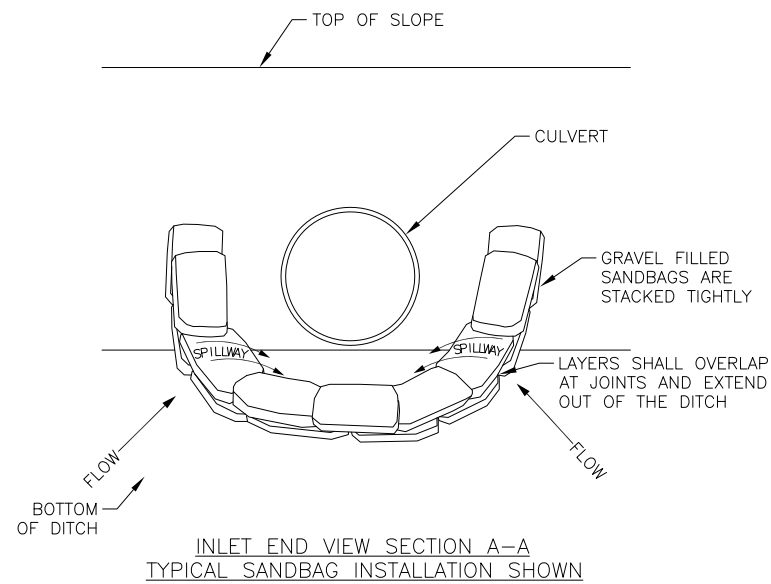
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CONCRETE WASHOUT
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CULVERT INLET PROTECTION NOTES:

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

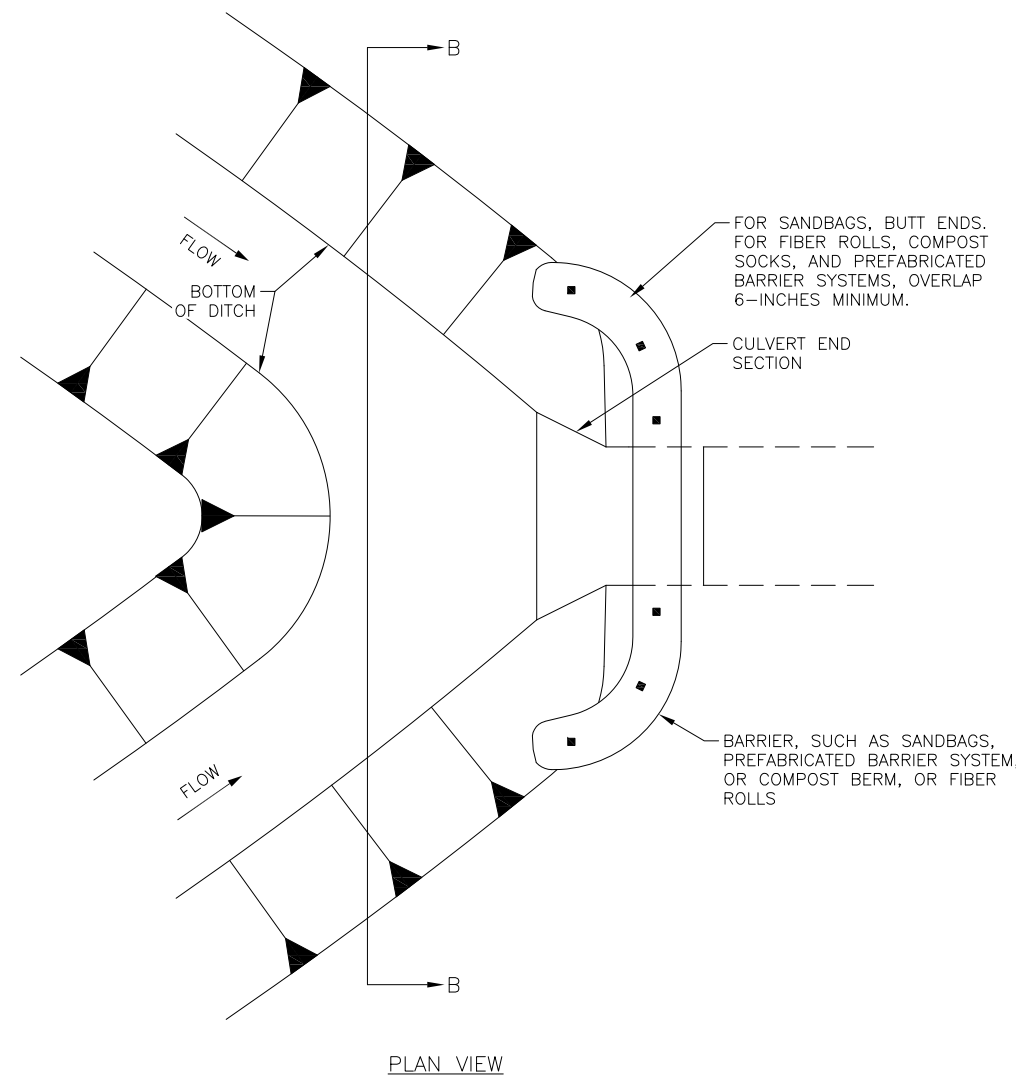
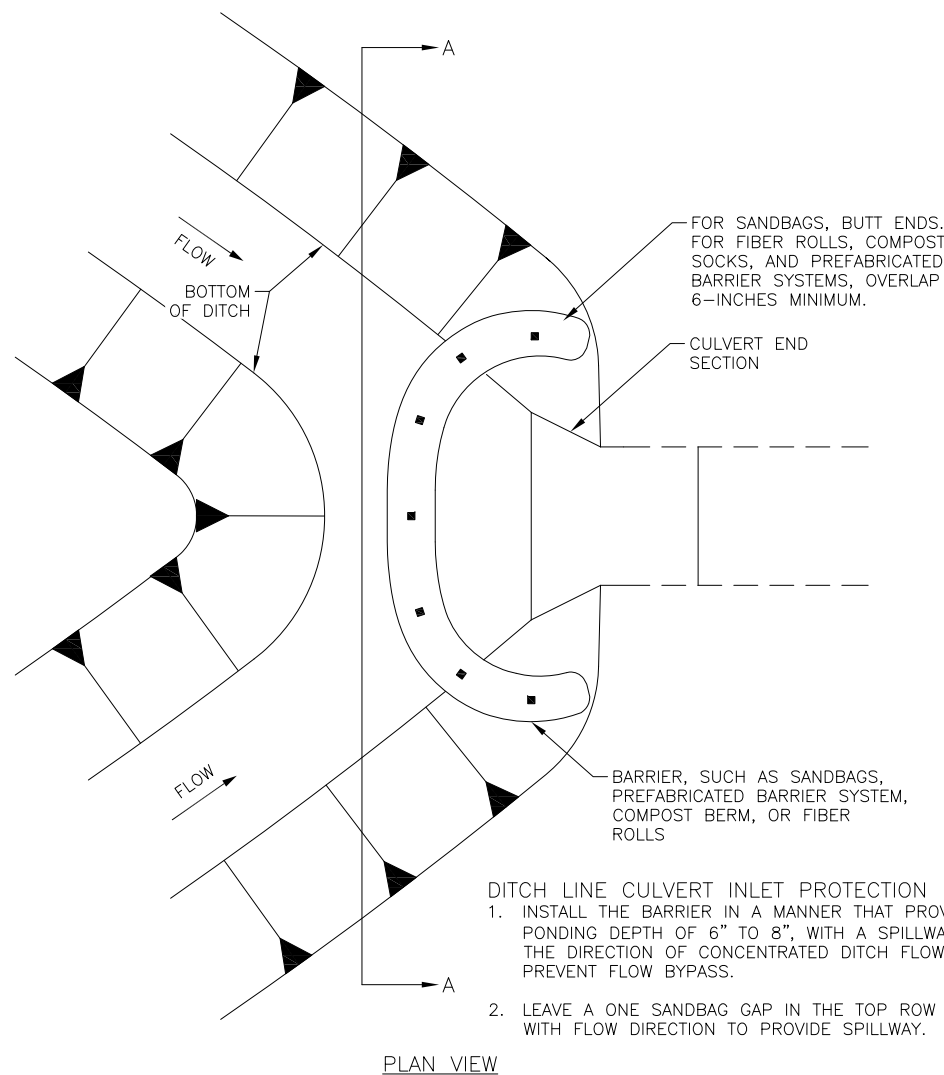
1. INSTALL WHERE INDICATED IN THE PLANS OR WHERE APPROVED BY THE ENGINEER.
2. ASSURE THAT BARRIER MAKES FULL CONTACT WITH SOIL ALL AROUND THE INLET.
3. IF PROTECTING BOTH DITCHLINE AND TOP OF PIPE, THE PROTECTION BARRIER CAN BE A SINGLE CONTINUOUS CIRCLE.
4. IN ADDITION:
 - a. PREFABRICATED BARRIER SYSTEM - 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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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

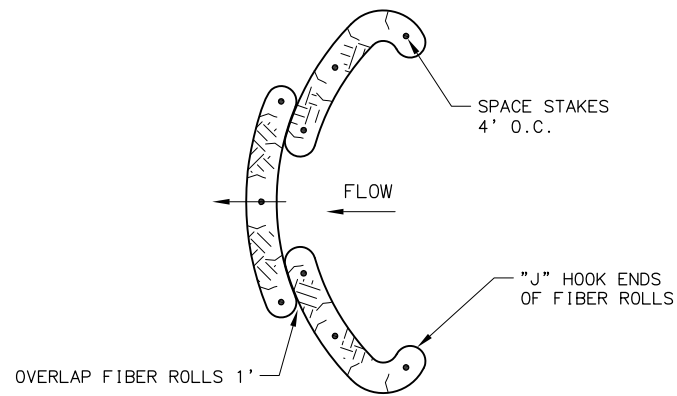
1. REPLACE DAMAGED SECTIONS OF FIBER ROLL.
2. REMOVE ACCUMULATED SEDIMENT UPSLOPE OF THE ROLL BEFORE IT REACHES ONE-HALF THE DISTANCE BETWEEN THE TOP OF THE FIBER ROLL AND THE GROUND SURFACE. WHEN PROTECTING A WATER BODY OR STORM DRAIN INLET, REMOVE ACCUMULATED SEDIMENT UPSLOPE OF THE ROLL WHEN IT REACHES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

REMOVAL

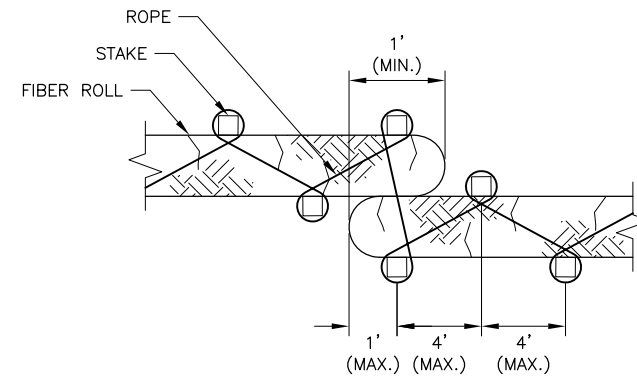
1. REMOVE FIBER ROLLS WHEN THE AREA IS STABILIZED OR WHEN THEY ARE NO LONGER NECESSARY.
2. COLLECT AND DISPOSE OF THE ACCUMULATED SEDIMENT.
3. REMOVE AND DISPOSE OF FIBER ROLLS.
4. FILL THE TRENCHES AND STAKE HOLES TO BLEND WITH THE ADJACENT GROUND AND REVEGETATE AS NECESSARY.

RETENTION

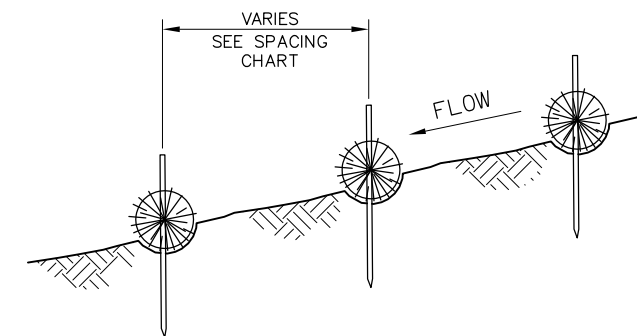
1. LEAVE FIBER ROLLS IN PLACE WHEN THE AREA IS STABILIZED OR WHEN THEY ARE NOT NECESSARY.
2. COLLECT AND DISPOSE OF THE ACCUMULATED SEDIMENT.
3. REMOVE AND DISPOSE OF THE NETTING, STAKES, AND ROPE.



PLAN



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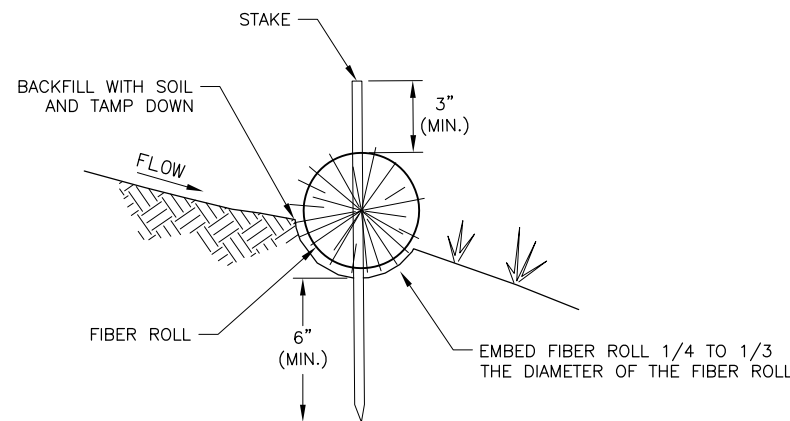
TYPICAL SPACING CHART	
SLOPE	SPACING (FEET)
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2:1	20
3:1	30

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.



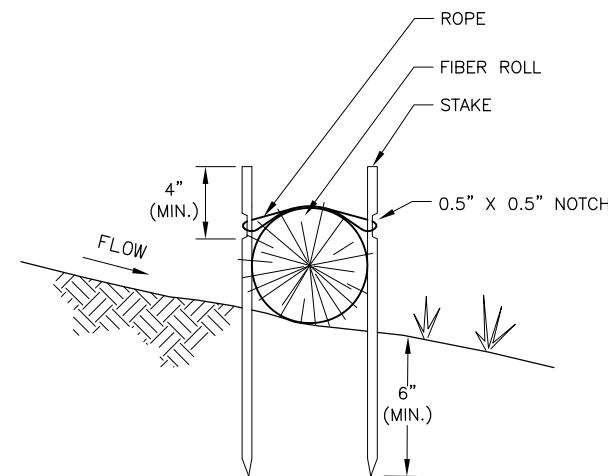
SECTION

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

NOT TO SCALE

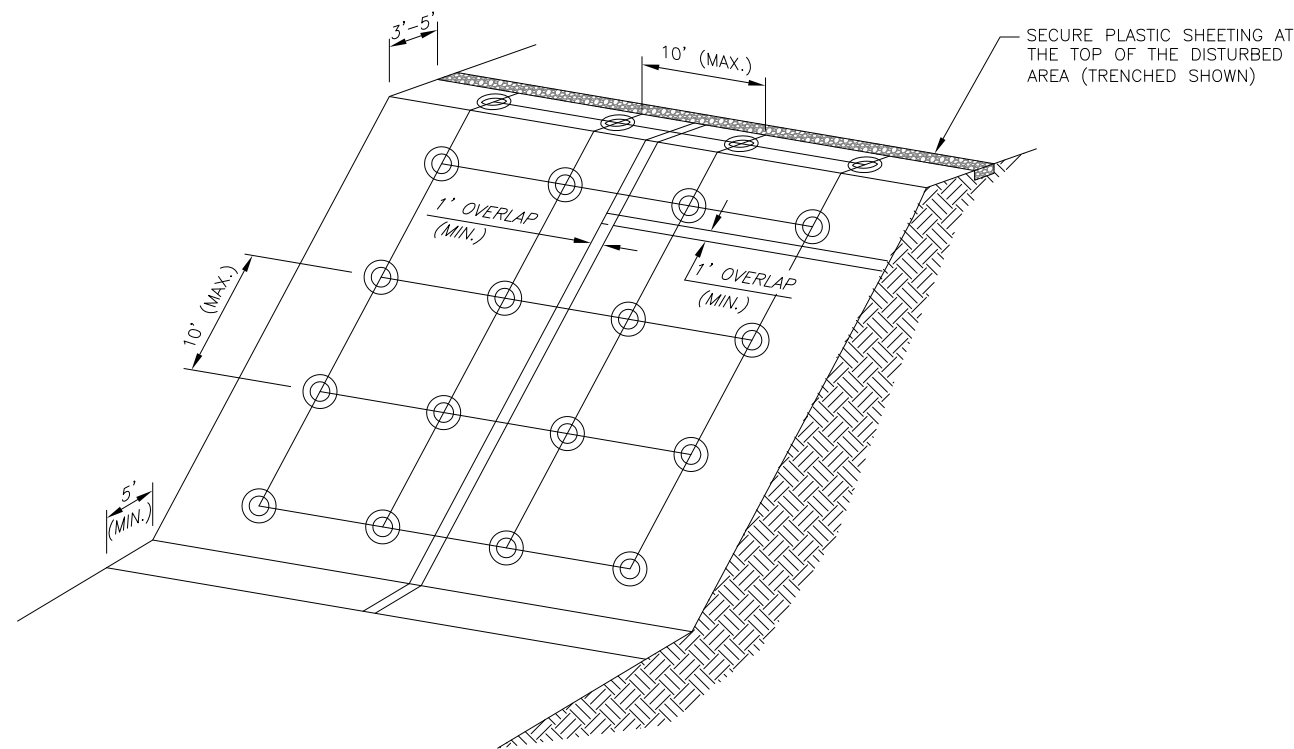
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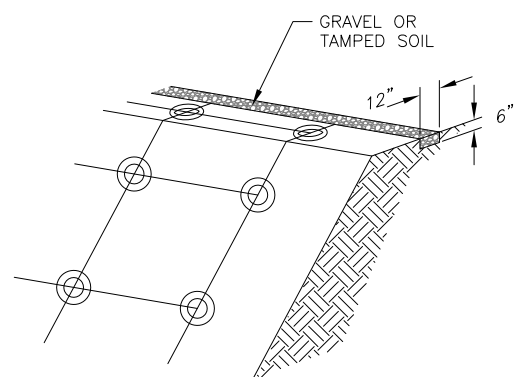
FIBER ROLLS FOR EROSION AND SEDIMENT CONTROL

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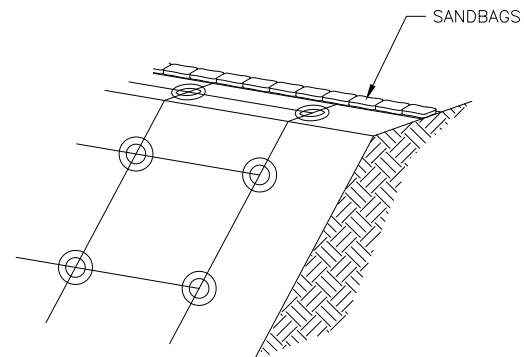
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PERSPECTIVE



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.

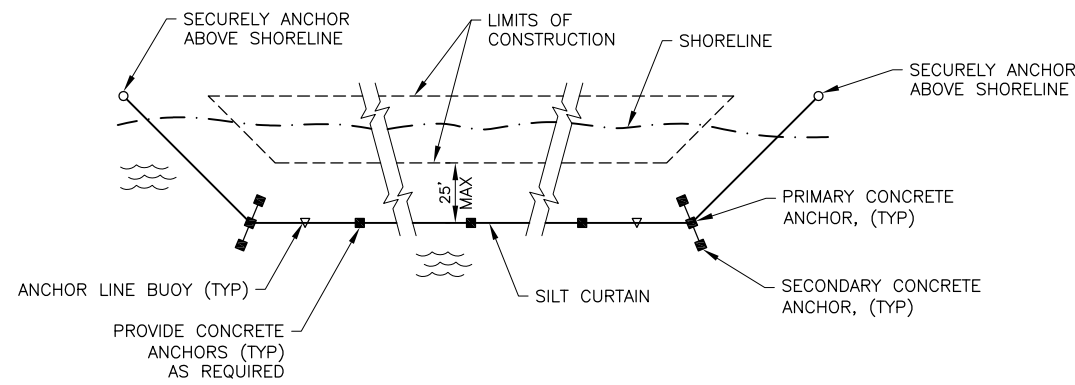
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PLASTIC COVERING

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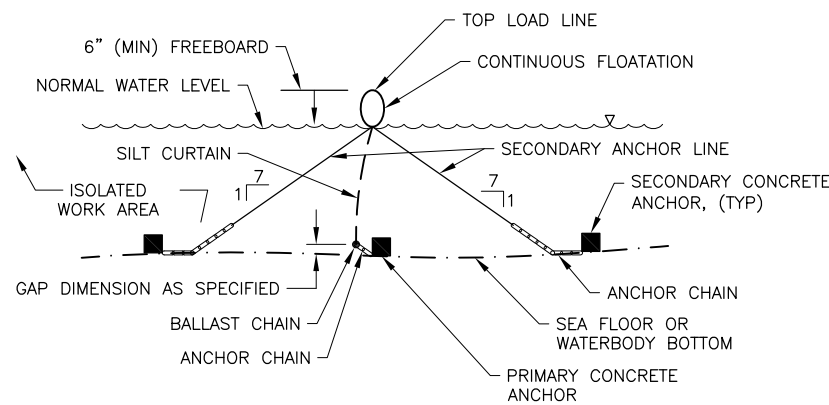
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PLAN

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.

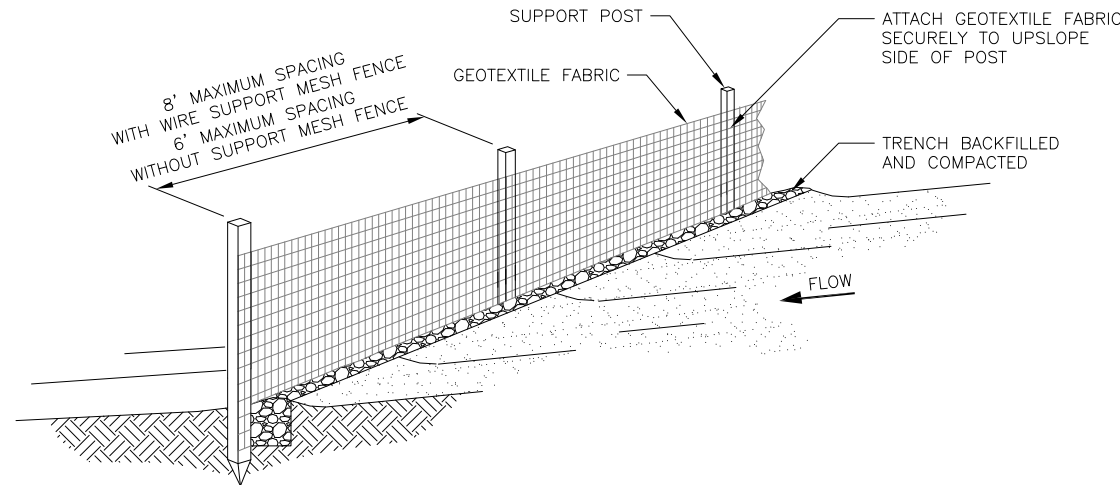
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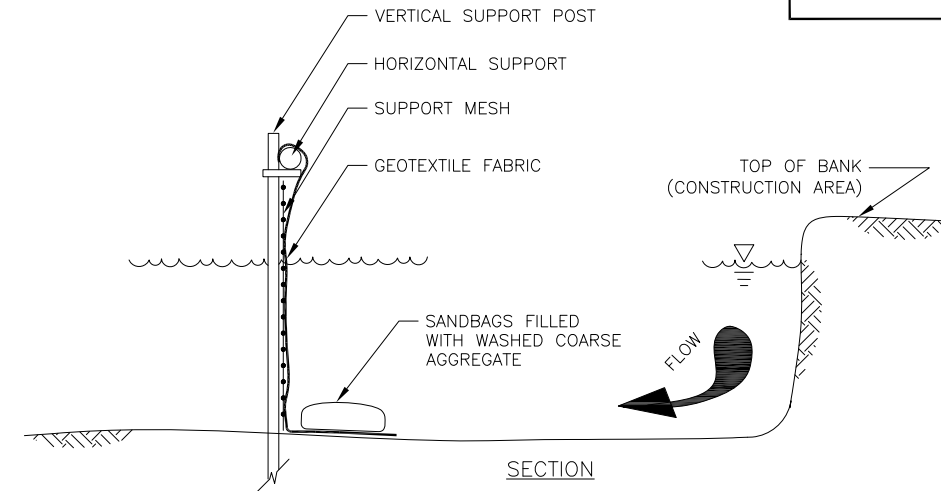
SILT CURTAIN

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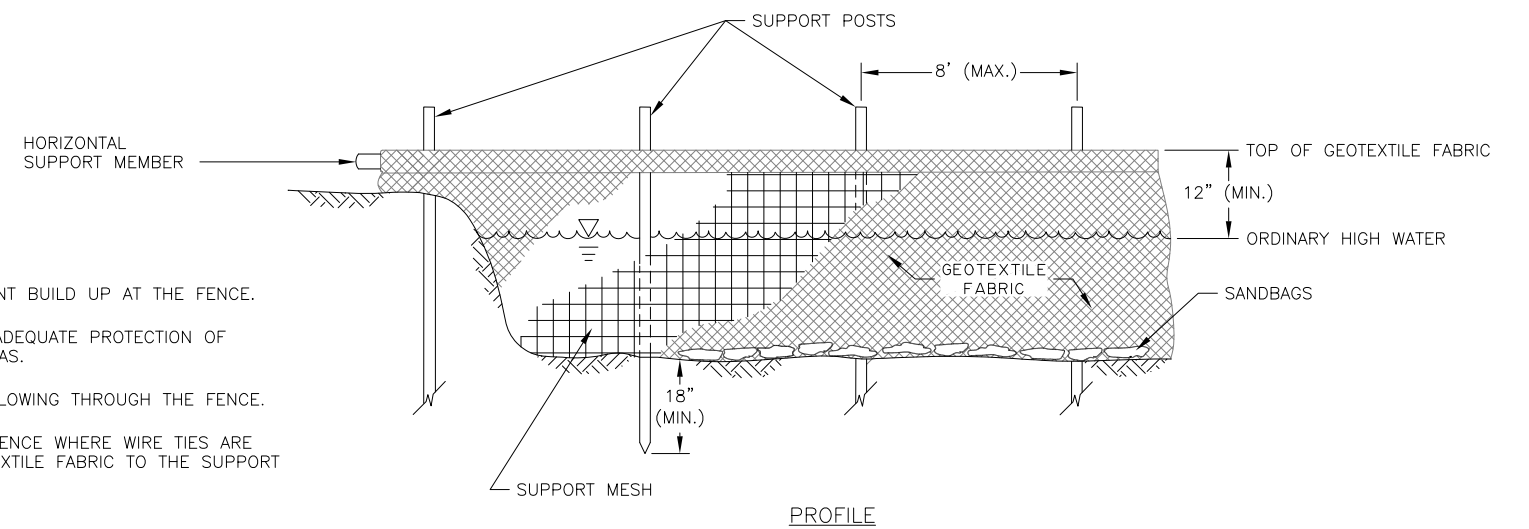
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GENERAL INSTALLATION
NOT TO SCALE



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

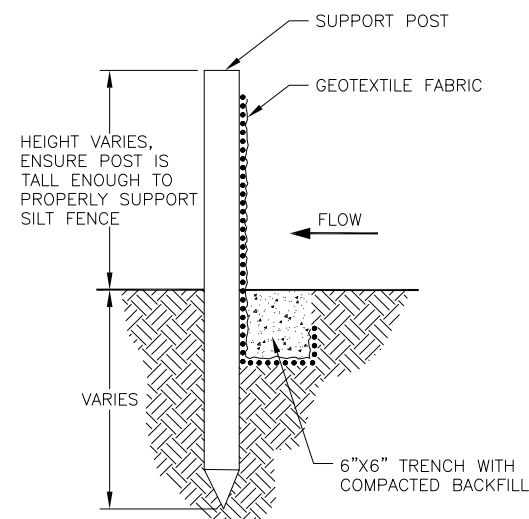
1. WHEN DISTURBED AREAS ARE PERMANENTLY STABILIZED OR SEDIMENT PROTECTION IS NO LONGER NEEDED, COLLECT AND PROPERLY DISPOSE OF ACCUMULATED SEDIMENT OR SEED IN PLACE.
2. CUT FABRIC AT GROUND LEVEL AND REMOVE SUPPORTS.
3. DISCARD FILTER FENCE AS APPROVED. AVOID DAMAGE TO SENSITIVE AREAS (E.G. WETLAND OR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

STANDING WATER NOTES:

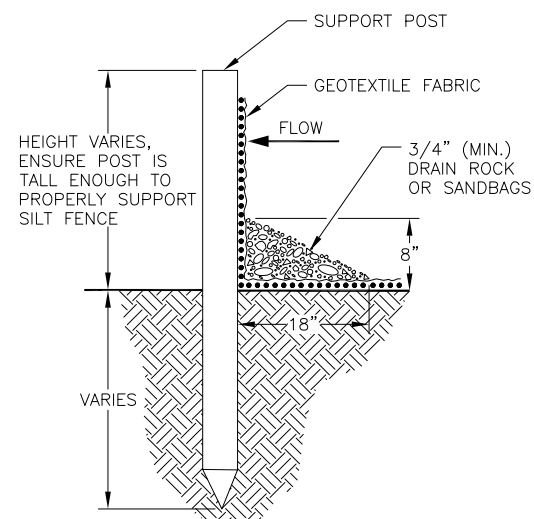
- INSTALLATION**
1. DRIVE SUPPORT POSTS INTO THE GROUND AND ATTACH A HORIZONTAL SUPPORT MEMBER.
 2. ATTACH SUPPORT MESH AND GEOTEXTILE ON THE UPSLOPE SIDE OF THE STAKES, EXTEND GEOTEXTILE ON THE GROUND UPSLOPE OF THE FENCE, AND ANCHOR THE GEOTEXTILE WITH SANDBAGS OR EQUIVALENT TO PREVENT GAPS.
 3. SPACE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

REVISIONS		
Date	Description	By

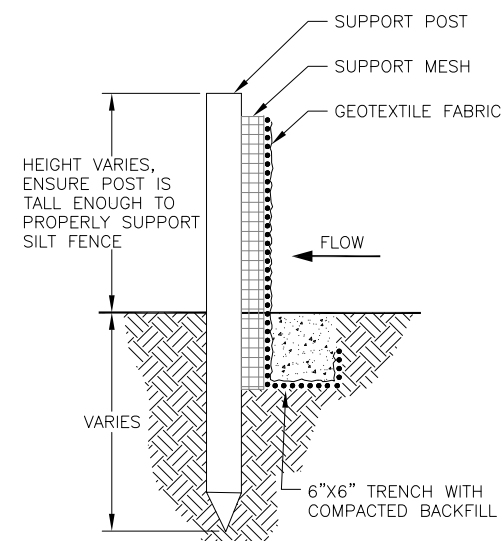
State of Alaska DOT&PF
SILT FENCE
 (NOTES, GENERAL
 INSTALLATION, & STANDING
 WATER INSTALLATION)
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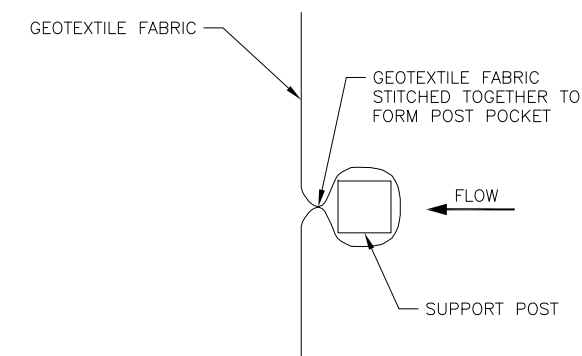
TRENCH DETAIL
NOT TO SCALE



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.

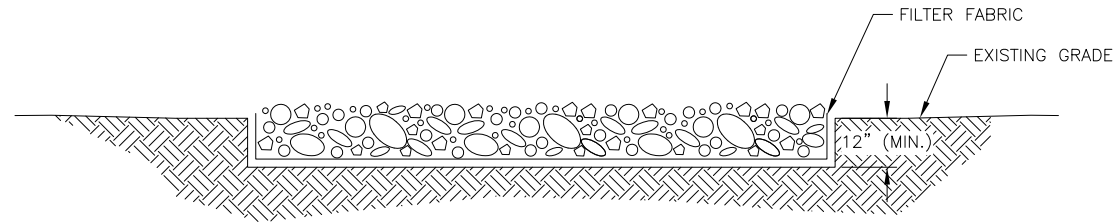
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Date	Description	By

State of Alaska DOT&PF

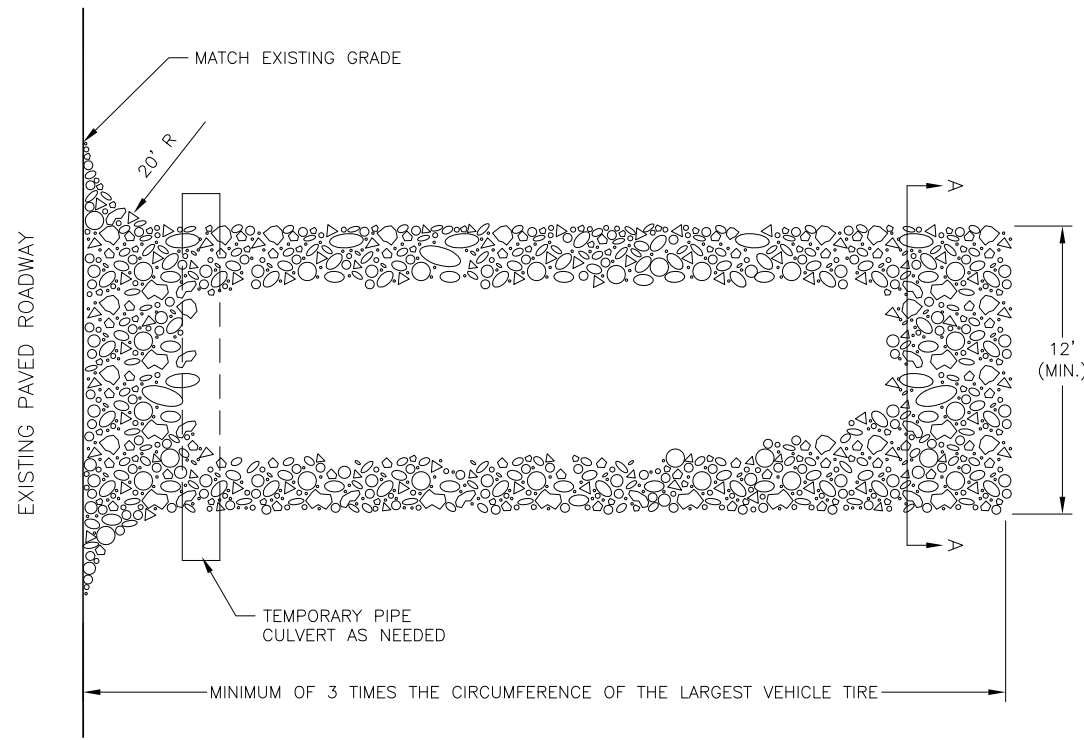
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SECTION A-A



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

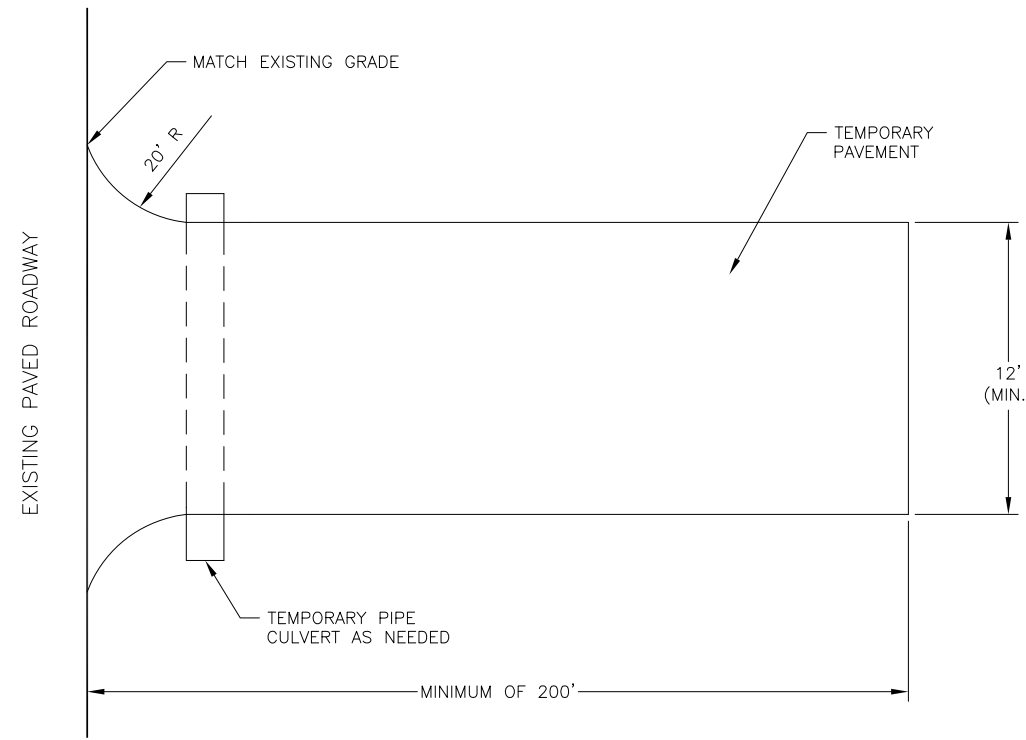
1. PLACE THE FILTER FABRIC AND ROCK TO THE SPECIFIC GRADE SHOWN ON THE PLANS.

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

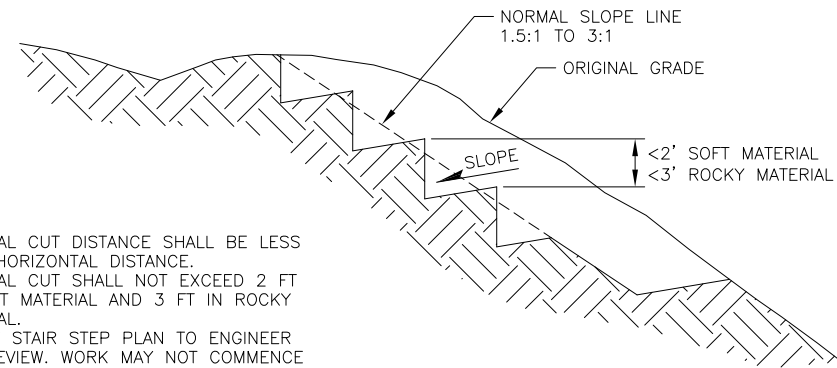
1. REMOVE THE STABILIZED CONSTRUCTION EXIT AND ANY SEDIMENT TRAPPING STRUCTURES AFTER THEY ARE NO LONGER NEEDED, OR WITH FINAL SITE STABILIZATION.
2. REGRADE AND PERMANENTLY STABILIZE THE REMAINING DISTURBED AREAS ACCORDING TO THE PLANS.

REVISIONS		
Date	Description	By

State of Alaska DOT&PF
**STABILIZED
CONSTRUCTION EXIT
(NOTES, ROCK &
TEMPORARY PAVEMENT)**

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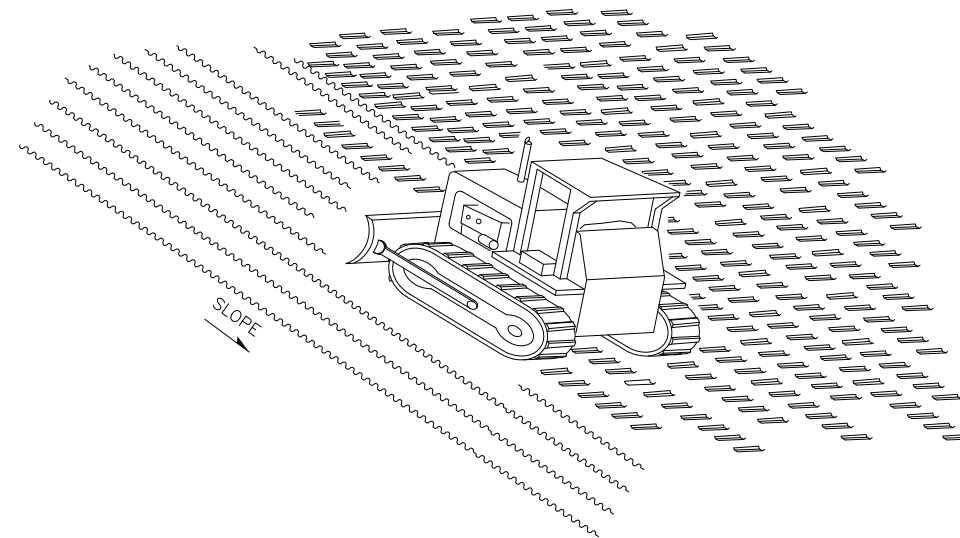
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NOTES:

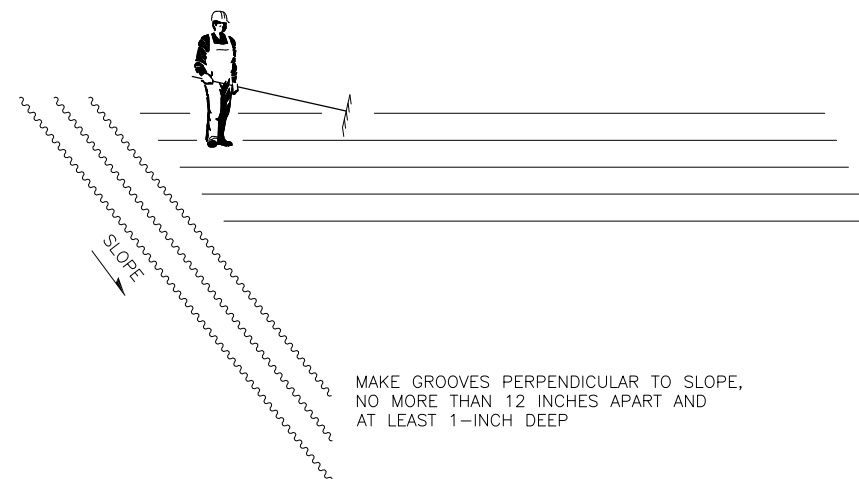
1. VERTICAL CUT DISTANCE SHALL BE LESS THAN HORIZONTAL DISTANCE.
2. VERTICAL CUT SHALL NOT EXCEED 2 FT IN SOFT MATERIAL AND 3 FT IN ROCKY MATERIAL.
3. SUBMIT STAIR STEP PLAN TO ENGINEER FOR REVIEW. WORK MAY NOT COMMENCE UNTIL AFTER APPROVAL.

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.

NOT TO SCALE

REVISIONS		
Date	Description	By

State of Alaska
Department of Transportation
& Public Facilities
SURFACE ROUGHENING

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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.

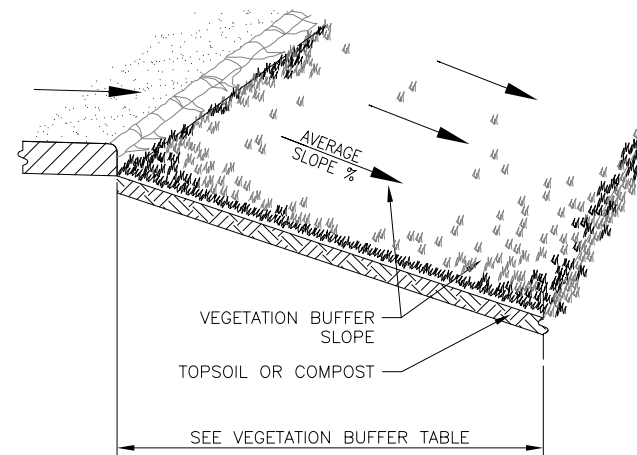
REMOVAL

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.



PERSPECTIVE

NEW VEGETATION BUFFER

NOT TO SCALE

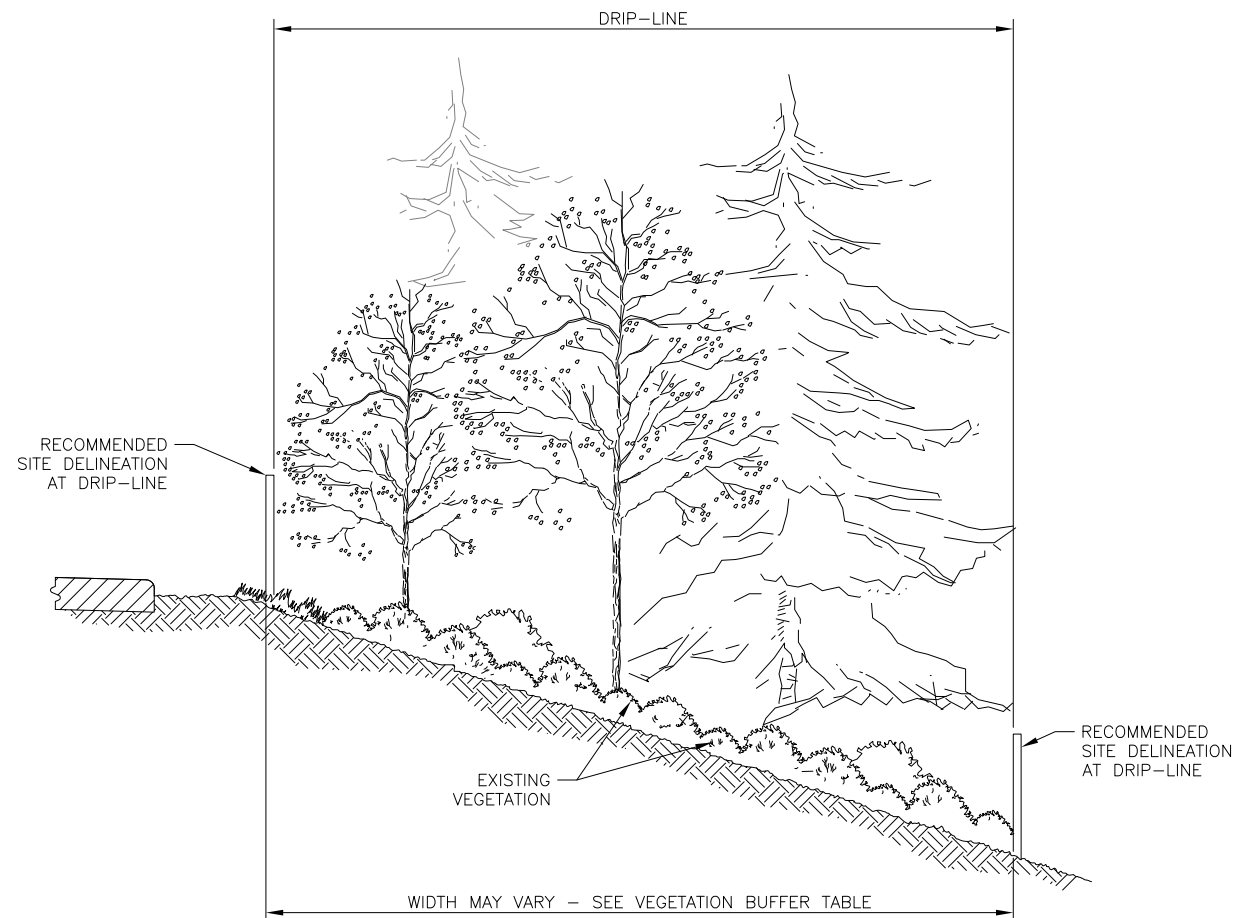
NEW VEGETATION BUFFER AREA NOTES:
THIS BMP IS NOT APPROPRIATE FOR PROJECTS LASTING LESS THAN 30 DAYS. THIS BMP IS NOT APPROPRIATE FOR ALL CLIMATE ZONES IN ALASKA.

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.



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.

REVISIONS		
Date	Description	By

State of Alaska DOT&PF
**VEGETATION
BUFFER**

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APPENDIX D
SUPPORTING DOCUMENTATION

ALASKA'S IMPAIRED WATERS – 2010

As of September 2010

Impaired Waterbody Categories:

Category 4a – Impaired water with a final/approved TMDL

Category 4b – Impaired water with other pollution controls

Category 5 – Impaired water, Section 303(d) list, require TMDL

Within the tables waters are listed by region - -Interior, Southcentral, Southeast – and alphabetically.

Category 4a Waterbodies								
<u>Alaska's 2010</u>								
Category 4a Waterbodies – Impaired but not needing a TMDL, TMDL has been completed								
<u>Region</u>	<u>Category</u>	<u>Alaska ID #</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 4a	40402-001	Birch Creek Drainage:- Upper Birch Creek; Eagle Creek; Golddust Creek	North of Fairbanks	N/A	Turbidity	Turbidity	Placer Mining
IN	Category 4a	40506-009	Garrison Slough	Eielson Air Force Base	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	Polychlorinated biphenyls (PCBs)	Military Base/ Operations
IN	Category 4a	40506-003	Noyes Slough	Fairbanks	7 miles	Residues	Debris	Urban Runoff
SC	Category 4a	30102-604	Akutan Harbor	Akutan Island	N/A	Residues Dissolved Gas	Settleable Solids Low Dissolved Oxygen	Seafood Processing/ Waste
SC	Category 4a	20401-004	Campbell Creek	Anchorage	10 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-402	Campbell Lake	Anchorage	125 acres	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff

SC	Category 4a	20401-003	Chester Creek	Anchorage	4.1 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff, Industrial
SC	Category 4a	20402-002	Eagle River	Eagle River	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	Ammonia, Chlorine, Copper, Lead, Silver	Wastewater Treatment Facility
SC	Category 4a	20401-005	Fish Creek	Anchorage	6.4 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-006	Furrow Creek	Anchorage	5.3 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	30101-501	King Cove	King Cove	N/A	Residues	Seafood Waste Residue	Seafood Processing/ Waste
SC	Category 4a	20505-409	Lake Lucille	Wasilla	N/A	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff
SC	Category 4a	20401-017	Little Campbell Creek	Anchorage	8.3 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-024	Little Rabbit Creek	Anchorage	6.2 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-018	Little Survival Creek	Anchorage	3.0 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	20401-020	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Anchorage	Glenn Hwy. Bridge. to Mouth	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SC	Category 4a	30102-603	South Unalaska Bay	Unalaska Island	N/A	Residues, Low Dissolved Oxygen (BOD5)	Seafood Waste Residues, Dissolved Gas	Seafood Processing Waste
SC	Category 4a	30102-607	Udagak Bay	Unalaska Island	N/A	Residues	Settleable solids	Seafood Processing Waste
SC	Category 4a	20401-419	University Lake	Anchorage	10 acres	Fecal Coliform	Fecal Coliform Bacteria	Urban Runoff

						Bacteria		
SC	Category 4a	20401-421	Westchester Lagoon	Anchorage	30 acres	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff
SE	Category 4a	10301-005	Duck Creek	Juneau	N/A	Dissolved Gas, Residues, Toxic & Other Deleterious Organic and Inorganic Substances, Fecal Coliform Bacteria Turbidity	Low Dissolved Oxygen, Debris, Iron, Fecal Coliform Bacteria, and Turbidity	Urban Runoff, Landfill, Road Runoff, Land Development
SE	Category 4a	10203-005	Granite Creek	Sitka	N/A	Turbidity Sediment	Turbidity, Sediment	Gravel Mining
SE	Category 4a	10203-601-001	Herring Cove of Silver Bay	Sitka	102 acres	Residues	Bark & Woody Debris	Log Storage from former Pulp Mill Operations
SE	Category 4a	10301-004	Jordan Creek	Juneau	3 miles from tide-water upstream	Dissolved Gas, Residues, Sediment	Debris, Sediment Low Dissolved Oxygen	Land Development, Road Runoff
SE	Category 4a	10203-602	Klag Bay	West Chichagof Island	1.25 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Arsenic, Cobalt, Copper, Lead, Manganese, Mercury, Silver, Zinc	Mining

SE	Category 4a	10301-001	Lemon Creek	Juneau	N/A	Turbidity Sediment	Turbidity, Sediment	Urban Runoff, Gravel Mining
SE	Category 4a	10301-014	Pederson Hill Creek	Juneau	Lower two miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Septic Tanks
SE	Category 4a	10303-004	Pullen Creek (Lower Mile)	Skagway	Lower mile of Pullen Creek	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Cadmium, Copper, Lead, Zinc	Industrial
SE	Category 4a	10203-601	Silver Bay	Sitka	6.5 acres	Residues Toxic & Other Deleterious Organic and Inorganic Substances	Pulp Residues, Logs, Bark & Woody Debris, Sediment Toxicity due to Wood Decomposition By-products	Industrial, Historical Pulp Mill Activity
SE	Category 4a	10103-602	Thorne Bay	Prince of Wales Island	7.5 acres	Residues	Bark & Wood Debris	Historical Log Transfer Facility
SE	Category 4a	10301-017	Vanderbilt Creek	Juneau	N/A	Turbidity Residues Sediment	Turbidity, Debris, Sediment	Urban Runoff
SE	Category 4a	10102-601	Ward Cove	Ketchikan	250 acres	Residues Dissolved Gas	Pulp Residues, Logs, Bark & Woody Debris, Low Dissolved Oxygen	Industrial

Category 4b Waterbodies

Alaska's 2010

Category 4b Waterbodies – Impaired, not needing a TMDL, and under “other pollution controls” and expected to meet standards in a reasonable time period

<i>Region</i>	<i>Category</i>	<i>Alaska ID #</i>	<i>Waterbody</i>	<i>Location</i>	<i>Area of Concern</i>	<i>Water Quality Standard</i>	<i>Pollutant Parameters</i>	<i>Pollutant Sources</i>
IN	Category 4b	40501-001	Cabin Creek	Nabesna	1.5 miles	Toxic & Other Deleterious Organic and Inorganic Substances	Manganese, Arsenic, Iron, Copper & Cadmium	Mine Tailings
SC	Category 4b	N/A	Exxon Valdez Beaches	Prince William Sound - Alaska	23 beaches	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Oil Spill

				Peninsula				
SE	Category 4b	10203-808	East Port Frederick	NE Chichagof Island	0.4 acres	Residues	Bark & Woody Debris	Log Transfer Facility
SE	Category 4b	10103-031	Fubar Creek	Prince of Wales Island	N/A	Sediment	Sediment	Timber Harvesting

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2010

Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL; Clean Water Act Section 303(d) Listed Waters

<u>Re g ion</u>	<u>Category</u>	<u>Alaska ID #</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 5 Section 303(d) listed	40506-007	Chena River	Fairbanks	15 miles	Sediment	Sediment	Urban Runoff
IN	Category 5 Section 303(d) listed	40506-002	Chena Slough	Fairbanks	13 miles	Sediment	Sediment	Urban Runoff
IN	Category 5 Section 303(d) listed	40402-010	Crooked Creek Bonanza Crooked Deadwood Ketchem Mammoth Mastodon Porcupine	North of Fairbanks	77 miles	Turbidity	Turbidity	Placer Mining
IN	Category 5 Section 303(d) listed	40509-001	Goldstream Creek	Fairbanks	70 miles	Turbidity	Turbidity	Placer Mining
IN	Category 5 Section 303(d) listed	30501-002	Kuskokwim River	Red Devil	1,000 feet, 900 feet down river and 100 feet upriver from mouth of Red	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Antimony, Arsenic, Mercury	Mining

					Devil Creek			
IN	Category 5 Section 303(d) listed	40506-003	Noyes Slough	Fairbanks	7 miles	Sediment, Petroleum Hydrocarbons, Oil & Grease	Sediment, Petroleum Products,	Urban Runoff
IN	Category 5 Section 303(d) listed	30501-002	Red Devil Creek	Red Devil	0.5 mile of creek	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Antimony, Arsenic, Mercury	Inactive Mine
IN	Category 5 Section 303(d) listed	40510-101	Slate Creek	Denali National Park	2.5 miles	Turbidity	Turbidity	Mining
SC	Category 5 Section 303(d) listed	20505-401	Big Lake	Wasilla	1,250 acres	Petroleum Hydrocarbons	Total Aromatic Hydrocarbons (TAH)	Motorized watercraft

SC	Category 5 Section 303(d) listed	30101-503	Cold Bay	King Cove, Alaska Peninsula	0.01 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Military, Fuel Storage
SC	Category 5 Section 303(d) listed	20505-001	Cottonwood Creek	Wasilla	7 miles	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff, Urban Development
SC	Category 5 Section 303(d) listed	30102-606	Dutch Harbor	Unalaska Island	0.5 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Industrial, Urban Runoff
SC	Category 5 Section 303(d) listed	30203-001	Egegik River	Egegik	0.25 mile	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Spills, Fuel Tanks, Underground Fuel Tanks
SC	Category 5 Section 303(d) listed	20201-401	Eyak Lake	Cordova	50 feet of shoreline	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products, Petroleum Contamination, Sheen	Above Ground Storage Tanks, Spills
SC	Category 5 Section 303(d) listed	20401-412	Hood/Spenard Lake	Anchorage	307 acres	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff, Industrial
SC	Category 5 Section 303(d) listed	30102-602	Iliuliuk Harbor	Dutch Harbor	1.4 acres	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Urban Runoff
SC	Category 5 Section 303(d) listed	20402-001	Matanuska River	Palmer	½ mile	Residues	Debris	Landfill
SC	Category 5 Section 303(d) listed	30101-502	Popof Strait	East Aleutians Borough	5 miles	Residues	Seafood Waste Residue	Seafood Processor
SC	Category 5 Section 303(d) listed	30102-409	Red Lake Anton Road Ponds	Kodiak	2.0 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Iron, Manganese	Urban Runoff

SC	Category 5 Section 303(d) listed	20401-020	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Anchorage	11 miles, Glenn Hwy. Bridge. Down to Mouth	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Urban Runoff
SE	Category 5 Section 303(d) listed	10203-002	Katlian River	N. of Sitka, Baranof Island	4.5 miles	Sediment, Turbidity	Sediment, Turbidity	Timber Harvest
SE	Category 5 Section 303(d) listed	10103-504	Salt Chuck Bay	Kasaan Area, Prince of Wales Island	0.03 square miles	Toxic & Other Deleterious Organic and Inorganic Substances	Metals -- Copper	
SE	Category 5 Section 303(d) listed	10303-601	Skagway Harbor	Skagway	1.0 acre	Toxic & Other Deleterious Organic and Inorganic Substances	Metals – Cadmium, Copper, Lead, Mercury, Zinc	Industrial

SE	Category 5 Section 303(d) listed	10103-010	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3027 (Stream 3)	Prince of Wales Island	0.4 mile	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Aluminum, Cadmium, Copper, Iron	Road Construction
SE	Category 5 Section 303(d) listed	10103-012	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3021 (Stream 6)	Prince of Wales Island	1.14 mile	Toxic & Other Deleterious Organic and Inorganic Substances, Dissolved Inorganic Substances	Metals – Aluminum, Cadmium, Copper, Iron, Manganese, Sulfate	Road Construction
SE	Category 5 Section 303(d) listed	10103-013	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3019 tributary (Stream 7)	Prince of Wales Island	0.3 mile	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Aluminum, Cadmium, Copper, Iron, Manganese	Road Construction
SE	Category 5 Section 303(d) listed	10103-014	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3019 (Stream 8)	Prince of Wales Island	0.3 mile	Toxic & Other Deleterious Organic and Inorganic Substances	Metals - Cadmium, Copper, Iron, Manganese, Nickel, Zinc	Road Construction
SE	Category 5 Section 303(d) listed	10103-015	Unnamed Creek, Sweetwater Lake, USFS 3030 Road, ADF&G Stream 3017 (Stream 9)	Prince of Wales Island	0.8 mile	Toxic & Other Deleterious Organic and Inorganic Substances, Dissolved Inorganic Substances	Metals – Aluminum, Cadmium, Copper, Iron, Manganese, Nickel, Zinc, Sulfate	Road Construction

Alaska DEC Contaminated Sites

Contaminated Site Locations with Cleanup Chronology Reports from Alaska DEC



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APPENDIX B

Construction Surveying Requirements

**CONSTRUCTION SAFETY AND PHASING PLAN
JUNEAU INTERNATIONAL AIRPORT
RUNWAY SAFETY AREA IMPROVEMENTS – PHASE 2B**

**CITY AND BOROUGH OF JUNEAU CONTRACT NO. BE-17-045
AIP 3-02-0133-XXX-2016
JUNEAU, ALASKA**

Prepared for:
Juneau International Airport
1873 Shell Simmons Drive, Suite 200
Juneau, Alaska 99801

Prepared By:
DOWL
4041 B Street
Anchorage, Alaska, 99503

Preparation Date:

July 2016

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LIST OF ACRONYMS

AC	Advisory Circular
ADG	Aircraft Design Group
AOA	Airport Operations Area
ATCT	Airport Traffic Control Tower
ATO	Air Traffic Organization
CBJ	City and Borough of Juneau
CFR	Code of Federal Regulations
CTAF	Common Traffic Advisory Frequency
EVAR	Emergency Vehicle Access Road
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FBI	Federal Bureau of Investigation
FOD	Foreign Object Debris
FSS	Juneau Flight Service Station
JNU	Juneau International Airport
LED	Light Emitting Diode
NAVAID	Navigational Aid
NOTAM	Notice to Airmen
NWDA	Northwest Development Area
NE	Northeast
NEDA	Northeast Development Area
OFA	Object Free Area
RAP	Reclaimed Asphalt Pavement
RCO	Remote Communications Outlet
RW	Runway
SIDA	Security Identification Display Area
SPCD	Safety Plan Compliance Document
SREF	Snow Removal Equipment Facility
STA	Security Threat Assessment
TL	Taxilane
TSA	Transportation Security Administration
TW	Taxiway
VASI	Visual Approach Slope Indicators

1.0 INTRODUCTION

The following is the Construction Safety and Phasing Plan to be used during the construction of the Juneau International Airport (JNU) Runway Safety Area Improvements Phase 2B project. The purpose of the plan is to present information needed for operation of the airport during construction to minimize disruption to operations of air and ground traffic and to facilitate construction of the project in the shortest time possible. Work to be accomplished on this project includes the following:

- Construction of Northwest Development Area (NWDA) Improvements;
- Installation of a geothermal loop field directly south of the proposed Snow Removal Facility (SREF) in the NWDA;
- Construction of Northeast Development Area (NEDA) Improvements;
- Installation of perimeter fence south of Seaplane Base near the Emergency Vehicle Access Road (EVAR); and

During construction in the NWDA and NEDA, the following will occur:

- Excavation;
- Grubbing and clearing;
- Grading/resurfacing;
- Installation of perimeter fence;
- Installation of water, sewer and drainage utilities; and
- Installation or replacement of taxiway/taxilane edge lighting.

2.0 COORDINATION

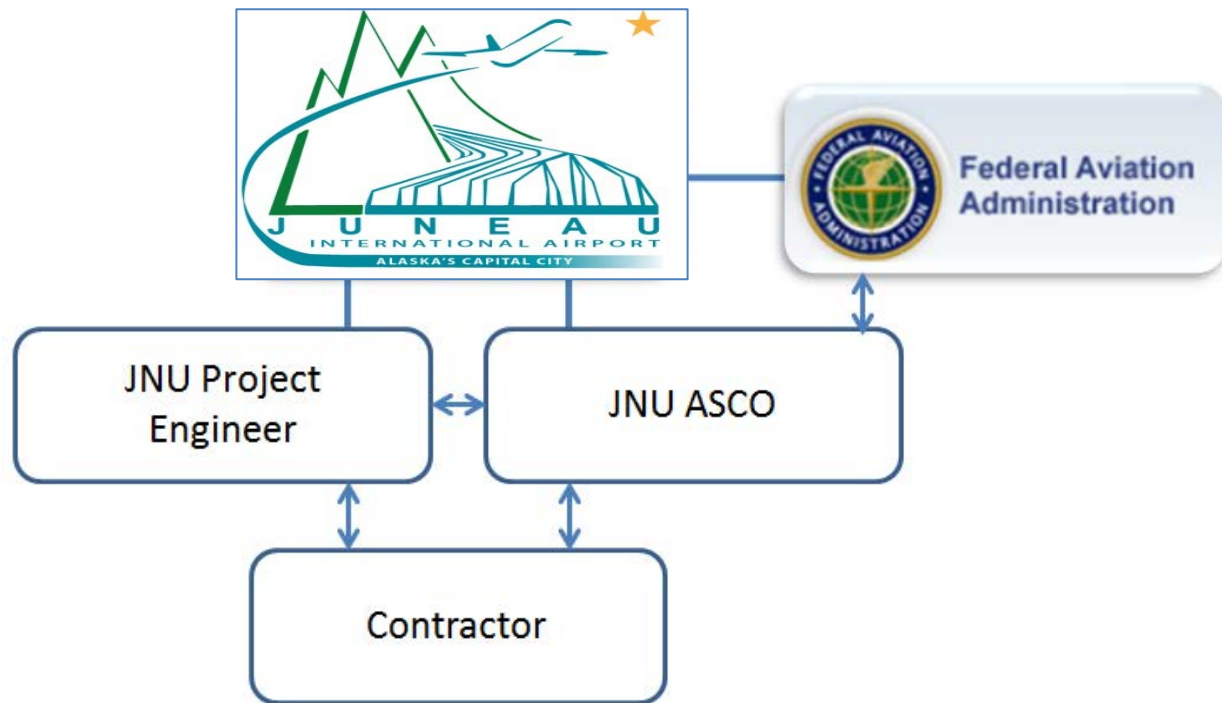
Throughout the construction project, the following safety and operational practices should be observed:

- The Contractor and Project Engineer must perform frequent onsite inspections throughout the project, with immediate remedy of any deficiencies, whether caused by negligence, oversight, or project scope change.
- Contractor shall ensure that employees, subcontractors, suppliers, and others associated with the work do not enter any airport area that is hazardous or into which they are not authorized, or any unauthorized persons must be restricted from entering unauthorized or hazardous areas.

- The Juneau Airport Safety and Compliance Officer (ASCO) may order the Contractor to suspend operations; move personnel, equipment, and materials to a safe location; and stand by until airport use is completed.
- Contractor personnel shall comply with all airport safety and security measures.

2.1 Chain of Notification

Before work begins, the Contractor shall provide a contact person who is available 24 hours a day throughout the duration of the project to address any safety issues that may arise, including maintenance of hazard lighting and barricades. That person's 24-hour cell phone number will be supplied to the Project Engineer, Juneau Airport Manager, and the ASCO.



The Project Engineer will be the central point of contact between the Contractor and JNU. JNU will be the point of contact for the Federal Aviation Administration (FAA). The Contractor is required to comply with direction from the ASCO. The ASCO will advise the Contractor if a directive is an emergency, urgent, or provide another timeline for compliance. The ASCO will notify the Contractor of any emergency operations, including responding Aircraft Rescue and Fire Fighting (ARFF) units, inbound aircraft in distress, law enforcement action, or other activity that may impact Contractor activities or for which the Contractor may need to clear certain areas.

2.2 Issuance of Notice to Airmen

The ASCO will communicate all construction Notices to Airman (NOTAMs) to the Juneau Flight Service Station (FSS). The Contractor shall not issue NOTAMs, but will be responsible for communicating all construction work needing NOTAMs at least 48 hours in advance to the Project Engineer and the ASCO. Likewise, changed conditions that might require modification of a NOTAM also need to be communicated.

In the event of an emergency or unforeseen circumstance that is directly related to construction activities and may immediately impact airfield safety, the Contractor is to contact the ASCO immediately and directly, then notify the Project Engineer without delay. The Contractor will follow up with written notification to the Project Engineer within 2 hours.

2.3 Radio Frequencies

The Contractor is responsible for providing its own radios. The Contractor must be able to communicate with their own staff on their own radio frequency. Additionally, the Contractor must monitor and communicate with the ASCO on a designated Contractor frequency. That frequency will be made available to the ASCO to program into Airport radios. The Contractor is encouraged to communicate on this company frequency whenever possible to encourage “situational awareness” for all project participants. The Contractor may monitor JNU Common Traffic Advisory Frequency (CTAF) frequency 118.7. At no time will the Contractor communicate/transmit on 118.7.

There may be times that radio communications are not appropriate due to complexity or sensitivity of an issue, and in those situations the Contractor may use cell phones:

Project Engineer, TBD: (907) ###-####

ASCO, TBD: (907) ###-####

Airport Maintenance: (907) 321-3801

If there appear to be unauthorized people in the area, the Contractor is obligated to challenge them. If the people are not able to provide proper identification, the Contractor shall contact the ASCO immediately on the radio, and follow up with a call to Airport Security:

Airport Security: (907) 321-3802

Monitor the individual(s) until JNU representatives arrive. Note that the Transportation Security Administration (TSA) inspectors will attempt to gain access to the site in order to test JNU’s security measures, and that failure could result in fines and establishment of more onerous security requirements.

The Contractor may monitor air traffic communication at their discretion as an additional safety measure, for emergency aircraft diversions, ARFF response, etc. However, the Contractor at no time will communicate on these frequencies. The following is a list of radio frequencies used by Juneau International Airport.

- CTAF - 118.7 MHz
- Automatic Terminal Information Service - 135.2 MHz
- Tower (Local) - 278.3 MHz, 118.7 MHz (and 120.7 MHz between May and September)
- Ground Control - 121.9 MHz
- Juneau Downtown Remote Communications Outlet (RCO) - 122.15 MHz (FSS)

In the event of an emergency or unforeseen circumstance that is directly related to construction activities and may immediately impact airfield safety, the Contractor is to contact the ASCO immediately and directly, then notify the Project Engineer without delay. The Contractor will follow up with written notification to the Project Engineer within 2 hours.

2.4 Contractor progress meetings

Weekly meetings shall be held with airport users, the Airport Manager, the Contractor and his subcontractors, and the Project Engineer. Scope or schedule changes shall be addressed at these weekly meetings. Safety concerns will be a standing agenda item.

3.0 CONSTRUCTION ACTIVITIES

3.1 General Safety Requirements

Throughout the construction project, the following safety and operational practices should be observed:

- All construction personnel shall be familiar with the information presented in the JNU Airfield Ground Vehicle Operator Self Study Guide. Operators will be required to pass an exam demonstrating their understanding of the study guide.
- Operational safety shall be a standing agenda item during progress meetings throughout the construction project.
- The ASCO will coordinate with JNU ARFF on non-emergency routing and utility issues.
- Prior to disruption, the Project Engineer will coordinate with airport operators on access impacts.
- The Contractor, Project Engineer, and ASCO must perform frequent onsite inspections throughout the project, with immediate remedy of any deficiencies, whether caused by negligence, oversight, or project scope change.

- If work is being done within the safety area of a taxiway or in the vicinity of movement areas, the Contractor shall be in contact with the ASCO, who will coordinate with the appropriate FAA air traffic facility.
- Airport taxiways shall remain open to aircraft operations to the maximum extent possible. This effort must be coordinated in advance with the Project Engineer and ASCO.
- The Contractor shall provide flaggers and barricades as necessary to control vehicle movement in the vicinity of work. Flaggers shall be trained and certified.
- The Contractor shall ensure that employees, subcontractors, suppliers and others associated with the work are limited to authorized areas only.
- The Contractor shall not allow any unauthorized persons into the secure areas of the airport through his/her authorized areas.
- The Project Engineer, Airport Traffic Control Tower (ATCT), ASCO, or other designated airport representative may order the Contractor to suspend operations; move personnel, equipment, and materials to a safe location; and stand by until cleared to continue operations.
- The Contractor personnel shall comply with all airport safety and security measures.
- The Construction activities shall not penetrate any surfaces as defined by 14 CFR Part 77 without prior written permission.
- The Contractor shall submit a safety plan compliance document (SPCD) conforming to this document and any other FAA or JNU requirements pertaining to construction activities at JNU, to be reviewed by the Project Engineer and Airport Manager or designee.

3.2 Construction Phase Elements

Work is expected to begin in 2016, with completion by Fall 2017. Interim completion dates are shown in the plans. All operations must be coordinated with airfield users, including large and small airlines, airfield maintenance, FAA Air Traffic Control, FAA Flight Service, FAA Technical Operations (navigational aids), TSA, ARFF, wildlife control services, and the public. The Contractor is required to prepare a Critical Path Method schedule that includes detail for work that will occur within these critical areas. This efforts listed under the proposed schedule must be coordinated with the contractor performing work in the SREF site. The Contractor must submit the proposed schedule to the Project Engineer for approval prior to beginning work. This schedule must be kept current and frequent updates submitted throughout the project, as many parties will adapt their operations to accommodate it.

The Contractor shall begin work in a timely manner, minimize construction shut-downs, and coordinate with the Project Engineer and ASCO to minimize the impact to airport operations. The Contractor shall

give the Project Engineer notice at least 30 days in advance of proposed impacts to the Airport Operations Area (AOA). The Contractor shall propose reasonable limits on the size and duration of any impacts. During larger aircraft operations, personnel and equipment must be kept at least 93 feet from the centerline of Taxiway (TW) A. The ASCO will advise the Contractor of any additional operations that require the Contractor to clear the area, and the Contractor should keep in mind that these operations may not be scheduled, and could happen at any time. Additional restrictions may be placed on construction activities during air carrier operations, such as a requirement for moving equipment out of the movement area and the associated airspace. The proposed schedule for air carrier operations may be obtained from the Project Engineer.

It is the Contractor's responsibility to submit an FAA Form 7460 to the FAA prior to beginning construction. This submission begins an airspace study process, and *construction cannot begin* until the study is complete. The form must be submitted at least 45 days prior to construction, or on the day the construction permit is filed, whichever is earliest. Included with the form are directions on how to complete it.

The FAA airspace study will ensure construction activities do not require the FAA to adjust aircraft approach minimums to account for minimum height from obstacles. The Contractor should advise the FAA of:

- Haul routes, their location and the height of equipment that will be using them
- Stockpile locations, and approximate height
- Cranes, drills or structures that will be erected for the duration of the project. Note that temporary operations of these structures can be addressed with a NOTAM, and need to be coordinated with the ASCO in compliance with directions below.

3.2.1 Areas closed to aircraft operations

The Contractor will coordinate project work with air carrier, air cargo, and air taxi operations. A work site subject to jet engine blast or propeller wash may have to be secured and personnel evacuated until subject aircraft have departed.

Closure of TW B-1 will be required during construction in the NWDA, requiring a NOTAM and coordination with the ACSO. Hazard marking barriers must be placed at the entrance of TW B-1 along TW A. TW B-1 signage must be blank, and taxiway edge lighting must be covered or removed. Pilots seeking access to facilities east of the NWDA must instead taxi along TW B-2. To prevent aircraft from taxiing into the NWDA construction zone, hazard marking barriers must be placed along the apron perimeter.

Partial closure of TW E-1 will be required as part of the NEDA construction. The east side of TW E-1 will be closed, requiring temporary reflective visual aids and continuous edge striping along the centerline of TW E-1, allowing pilots to use the west side of TW E-1. Coordination with the Project Engineer and the ASCO is required. Because the west lane of TW E-1 is 25 feet in width, aircraft larger than Aircraft Design Group (ADG) I will need ASCO coordination to use TW E-1 during construction.

The Contractor shall coordinate NOTAM's with the Project Engineer and the ASCO 7 days in advance and then provide a notice at least 48 hours in advance before work begins. In addition, weekly meetings will be held between the Airport, Project Engineer, ASCO and Contractor to provide an update of construction work and its impact on current airport operations, tenants, and to those providing emergency medical evacuation services. Additional meetings will be held when the scope of work changes.

3.2.2 Duration of closures

Temporary closures of taxiways can only be put into effect with approval from the Engineer and ASCO who will coordinate with the Airport Manager and FSS. The construction contract documents require appropriate notices and markings before any restrictions are placed on airport services. The Contractor shall coordinate their activities and cooperate with the Project Engineer and ASCO, which will include:

- 30 day notice for activities that are anticipated to impact AOA operations or security operations.
- 15 day notice for work in the AOA that is not anticipated to impact AOA operations.

3.2.3 Construction staging areas

All staging areas are shown on the plans. Before occupying a temporary use/staging area, the Contractor shall mark the staging area limits with lath and flagging, and then arrange a joint inspection with the Engineer and Airport Manager to record the area's original condition. No motorized equipment shall be staged on gravel surfaces in the staging area without a drip pan. When the area is no longer needed, the Contractor shall arrange a joint inspection with the Engineer and Airport Manager to ensure the area has been returned to its original condition.

3.2.4 Construction access and haul routes

Haul routes are shown in the plans. Confine vehicles to the haul routes and work areas as shown on the plans or as directed by the Project Engineer. The Project Engineer must approve all haul routes prior to their use.

Before beginning and at the conclusion of hauling operations, a haul road inspection shall be conducted by the Contractor, Engineer, and Airport Manager. After the post-construction inspection, the Contractor

shall, at a minimum, restore haul route(s) to the pre-hauling condition. The Contractor will be required to repair any damage caused by the haul.

Maintain all roads used for hauling purposes during the construction of this project in accordance with the General Contract Provisions. To the degree possible, any roadway signs should comply with City and Borough of Juneau (CBJ) or state *Manual of Uniform Traffic Control Devices* standards. Return roads and all haul route surfaces to their prior conditions upon completion of the work. Provide water or other dust palliative and appropriate distribution equipment, as required, for dust control on the haul route surfaces and in the work area. In addition, develop a Traffic Control Program for use of the public and airport road system as per Section G-710 of the specifications.

Keep all active taxiway areas swept clean of materials spilled by Contractor operations. Remove all material spills from the active taxiways and aprons immediately to avoid damage to aircraft. Adequate equipment should be staged at the job site for immediate cleanup of any material spills on all active taxiway and apron surfaces. When trucks will be traversing aircraft operational surfaces, assign one laborer with a hand broom to sweep off excess material that accumulates on the outside of the trucks during loading. Clean all spilled materials off airport operational surfaces before opening to aircraft. Clean taxiway lights, as well as temporary lighting, before opening to aircraft.

When trucks will be traversing operational surfaces, one laborer with a hand broom will be assigned to sweep off excess material that accumulates on the outside of the trucks during loading. Each truck will be hand-swept before leaving the work areas. Alternatively, the Contractor can provide a washing station for trucks leaving the work areas.

If JNU, the Project Engineer, or the ASCO determine that a surface is not adequately cleaned, they will verbally notify the Contractor and log the communication in the inspection log. The Contractor will have 15 minutes to begin cleanup of the area. If the area is not adequately cleaned, JNU will provide clean-up services and charge the Contractor for the service, with a minimum two hour call out.

The Contractor shall be required to procure all necessary equipment for the contract. Use of the airport personnel and equipment shall not be allowed, unless emergency situations occur. The Contractor shall be billed for use of such equipment and personnel at the discretion of JNU.

3.2.5 Lighting and marking changes

The construction of taxilanes in the NWDA and NEDA will include installation of medium intensity edge lights and associated signage. As part of the NEDA improvements, the resurfacing of the east-lane shoulder of TW E-1 will include replacement of the existing medium intensity edge light system. The new lights and signs along TW E-1 will be Light Emitting Diode (LED) and similar in appearance to the existing lighting.

The proposed apron in the NEDA will extend to TW E-1, allowing aircraft to taxi directly to the proposed tie down area and future fixed-base operators (FBO) within the NEDA. To allow aircraft to taxi across the lane edge of TW E-1, the continuous taxiway edge marking along the east side must be replaced with dashed taxiway edge marking. The temporary edge markings along TW E-1 will conform to AC 150/5340-1L.

3.2.6 Required hazard marking and lighting

Hazard marking and lighting prevents pilots from entering areas closed to aircraft, and prevents construction personnel from entering areas open to aircraft. For any area affected by construction that is normally accessible to aircraft, personnel, or vehicles, there must be prominent, comprehensible warning indicators. Hazard marking and lighting must also be identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards, and include markings to identify FAA and JNU facilities, cables and power lines, including airport surfaces such as taxiway object free areas (OFA) and safety areas.

Barricades are not permitted within any active safety area. Within taxiway OFA and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades shall be supplemented with alternating orange and white flags at least 20 by 20 in (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open taxiway/taxilane safety area or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, or other surface wind currents.

Use the hazard marking barriers with spacing must be no greater than 4 feet apart to prevent vehicles from driving into the Aircraft Operations Area (AOA). Use highly reflective barricades to close both entrances to TW B-1 for the duration of its closure. During construction in the NWDA, partial apron closures are anticipated and will require placement of barriers to prevent aircraft from entering. Highly reflective barricades are also needed at the entrance of TW E-1 for the duration of its partial closure. Temporary reflective visual aids must be placed along the temporary taxiway edge of TW E-1 to provide guidance to taxiing aircraft.

The Contractor must ensure proper placement of the hazard marking barriers and temporary lighting as directed by the Engineer. The construction specifications must include a provision requiring the Contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting

and barricades. The Contractor must file the contact person's information with the Project Engineer and ASCO. Lighting should be checked for proper operation at least once per day, preferably at dusk.

4.0 AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION ACTIVITY

Construction within the NWDA is anticipated to impact taxi operation for aircraft that regularly use TW B-1 to access facilities within the area. As a result, the Contractor must coordinate with ASCO to issue a NOTAM to temporarily modify aircraft taxiing procedures within the work area. As discussed in Section 3.0, proper placement of hazard marking barriers and temporary lighting is necessary to properly identify the AOA boundary and guide taxiing aircraft.

The existing Float Plane Access Road will be realigned as part of the improvements of the NDWA, which may hinder access during construction for drivers who typically use the roadway to access the Seaplane Base from Alex Holden Way. The Contractor must ensure access for emergency vehicles during construction. The Contractor will need a traffic control plan guide drivers around the construction area.

As indicated in the plans, the temporary location of stock-piled materials for construction within the NWDA will be in the vicinity of Duck Creek. The Contractor must minimize any impact on Duck Creek by stabilizing stockpiled materials.

Construction in the NEDA will require partial closure of TW E-1 temporarily. As a result, the Contractor must coordinate with ASCO to issue a NOTAM. As discussed in Section 3.0, proper placement of hazard marking barriers and temporary lighting is necessary to properly identify the AOA boundary and guide taxiing aircraft.

Drainage and electrical utilities currently exist in the NWDA and NEDA. In addition, a geothermal ground loop field exists within the NEDA. The Contractor must ensure that construction operations such as excavation do not impact these existing utilities under the guidance of the Engineer.

5.0 PROTECTION OF NAVIGATION AIDS

Construction activity, vehicles and equipment may occur nearby the taxiway edge lighting of TW A during construction of the northwest and northeast developments. These taxiway edge lights serve as Navigational Aids (NAVAIDs) for pilots taxiing along TW A. The Contractor and Project Engineer must coordinate with an appropriate FAA Air Traffic Organization (ATO)/Technical Operations office to evaluate the effect of construction activity on the NAVAIDs along TW A. The Contractor must ensure that equipment or materials are not blocking the NAVAIDs from view for taxiing pilots. The Contractor must also ensure to not impact or demolish existing wires for the taxiway edge lighting along TW A.

The Contractor is not anticipated to need to work with the FAA's visual aids. If the Contractor inadvertently blocks or damages a visual aid, they will notify the ASCO immediately, who will then issue a NOTAM.

6.0 CONTRACTOR ACCESS

6.1 Location of stockpiled construction materials and staging areas

The temporary location of the stockpile for construction of the NWDA is specified in the plans. Due to the vicinity of the Float Plane Access Road, prominent markings or other visible indications must be placed around the stockpile area. Because Duck Creek is directly south of the proposed location, the Contractor must ensure the materials are stabilized so that contamination to the creek does not occur.

The location of the stockpile within the NEDA is specified in the plans. Due to its close proximity with nearby roadways and accesses, the stockpile area must have visible markings identifying its perimeter. The Contractor must ensure that materials within the stockpiles are stabilized to prevent potential material spillover into the nearby roadways and accesses. The Contractor may also use the existing Reclaimed Asphalt Pavement (RAP) stockpile located in the northeast section of the NEDA.

Contractor staging areas are shown in the plans. Before occupying a temporary use/staging area, the Contractor shall mark the staging area limits with lath and flagging and then arrange a joint inspection with the Project Engineer to record the area's original condition. No motorized equipment shall be staged on dirt surfaces in the staging areas without a drip pan. When the area is no longer needed, the Contractor shall arrange an inspection with the Project Engineer in order to ensure that the area is returned to its original condition. The Contractor shall document the original condition of the staging area through pictures or video and provide document copies to the Project Engineer.

The Contractor is responsible for providing a disposal site off airport property, and is required to obtain any additional permits necessary.

6.2 Vehicle and pedestrian operations

The AOA is typically defined by the perimeter fence surrounding the airfield, though the airport boundary may exceed the perimeter fence in some areas. Access onto the AOA is through any number of gates along the fence or doors through buildings. Contractor access onto the AOA is limited to the gates shown on the project phasing sheets.

6.2.1 Haul Routes

The phasing plan sheets depict haul routes for both overall site access from surrounding public roadways and haul routes to the individual phased work areas through the airport perimeter fence. Contractor access and hauling operations are strictly limited to the haul routes shown. Contractor is responsible for

any improvements and maintenance to haul routes as needed to efficiently perform construction activities. Use of alternative haul routes must be submitted for review and approved by the Project Engineer prior to be used. Following completion of construction Contractor is required to restore haul route to original condition. The Contractor shall document the pre-hauling condition by digital pictures or video.

6.2.2 Vehicle Markings and Control

Each Contractor licensed vehicle inside the airport perimeter fence shall display an orange and white aviation flag on a staff attached to the vehicle so that the flag is readily visible. Rigs with booms, dump trucks and similar equipment at any height must have flags and lighted beacons. Any vehicle or equipment, including loaders, operating inside the perimeter fence must also be equipped with a flashing amber beacon. All vehicles must have two way radios supplied by the Contractor to communicate with the Project Engineer and ASCO. Personal vehicles are forbidden within the project area. Personal vehicle parking, as well as Contractor equipment parking, shall be located as designated by JNU.

6.2.3 Radio Communication

The Contractor is responsible for providing its own radios, and must be able to communicate with staff on a unique radio frequency. Additionally, the Contractor must monitor and communicate with the ASCO on a designated frequency established by the Contractor.

6.3 Security Program

JNU is a Part 139 certificated airport and has a security program in place. See the plans and specifications for additional security requirements.

The Airport Manager must control access to the airport and prevent unauthorized persons from entering secure areas. In compliance with this requirement, the Airport Manager has established procedures to authorize or deny access to the AOA and to identify and control persons while in these areas. These areas will be identified by "Restricted Areas" signs, and requirements for access will be listed.

Access to restricted areas requires an airport security badge. The Contractor is advised to begin the badging process as soon as possible after receiving a notice to proceed. Current badging rules and protocols are available at the airport web site, and will be reviewed prior to a badge being issued to an individual. Badges are issued through the Airport Badging Office.

Contractor personnel should anticipate applying for a Security Identification Display Area (SIDA) badge. They can find application and training materials at the Airport Badging Office web site:

<http://www.juneau.org/airport/badging.php>

In order to receive a SIDA badge, the applicant must do the following:

- Provide required documentation to verify a person's identity. The list of appropriate documents is included with the badge application.
- Pass a Federal Bureau of Investigation (FBI) finger-print-based background check. Note that the SIDA badge application includes a list of disqualifying crimes. If an individual has committed any of these crimes within the last 10 years, they are ineligible to hold a badge.
- Pass a Security Threat Assessment (STA), conducted by the TSA. This assessment is in addition to the FBI check noted above.
- Pass the *Juneau International Airport Security Identification Display Area Training Course*.

TSA, the FBI or JNU can prohibit a person from receiving a badge if they believe, for any reason, that an individual may be a threat to security.

The Contractor will need to provide a letter on business stationary stating who has authority to serve as a badging coordinator for the Contractor. These parties will authorize all people who will be given a badge under the auspices of this project, and will be responsible for ensuring that badges are renewed, collected and returned as required. These persons need to have their badges before they can authorize others to receive their badges.

A badge applicant must physically present the application to the Airport Badging Office in order to begin the process, which will include an FBI finger-print-based and a TSA background check. The background check usually takes up to a week, but can take longer depending on FBI and TSA work load. A badge cannot be issued until the background check has been done, and the Airport has no control over how long it takes the FBI and TSA to do the background check, so all personnel are strongly encouraged to start the badging process as soon as possible.

A badge holder needs to have special endorsements to drive on the airport. Holding a badge does not automatically authorize someone to drive on the airport. Please refer to the *Juneau International Airport Airfield Ground Vehicle Operator Self-Study Guide*, available at the Airport Badging Office web site referenced above.

A badge holder may require escort to non-badged personnel under certain circumstances – refer to page 17 of the *Juneau International Airport Security Identification Display Area Training Course*, VII. Escort Authority. This document can be found at the Airport Badging Office web site referenced above.

Each person granted a badge is obligated to challenge people who are not displaying appropriate identification, and to immediately notify JNU of possible unauthorized access. Failure to comply with access rules can result in fines and denial of access.

6.4 Aeronautical Operation Area Entry Control

The Contractor will be responsible for preventing unauthorized access to the AOA by way of the construction site, including the maintenance of JNU perimeter gates in either: (1) a locked condition, or (2) attended by persons who ensure that only authorized personnel or vehicles are admitted through them. Any opening that would allow unauthorized access and permit a person into a restricted AOA must be approved by the Airport Security Coordinator in writing 30 days in advance, and be either secured to preclude unauthorized access or must be attended by persons as outlined above.

Security control must be maintained during fence removal or construction/demolition activities. Fence breaches or openings must be secured to the Project Engineer's satisfaction when not actively monitored by the Contractor. The Contractor is responsible for providing a flagger or other security monitor at any unsecured access gate or fence opening being used. The flagger must have the ability to call for assistance via radio or cell phone. They must also have a list of any personnel who have been denied access, along with badges that have not been recovered. They should also be briefed on vehicle equipment requirements, including two-way radios, flags, beacons and placards. The flagger has the authority to hold anyone at the gate who does not meet these requirements.

6.5 Gate Access

Gate proximity cards are issued through the Airport Badging Office. Any gates that will be held open must be approved by Airport Security Coordinator 30 days in advance. Flaggers monitoring the gates should be advised that other users of the gate – private pilots, airline vehicles, etc. – may not have the same vehicle requirements, and should not be denied access for those reasons. The flagger should have communications available that allow them to ask questions or call for assistance.

7.0 WILDLIFE MANAGEMENT

Contractors will not harass wildlife in any way. The Contractor shall notify the ASCO of:

- Any wildlife that interferes with construction operations
- Any wildlife that may present a hazard to aircraft. Examples include:
 - Large concentrations of wildlife, such as flocks of birds
 - Birds that appear to be in the approach path
 - Deer on the AOA

Stray domestic animals, such as dogs or horses, should also be reported to the ASCO. Contractor-owned dogs are not allowed inside the AOA.

The ASCO will coordinate with Wildlife Services to address any animal concern. Keep in mind that Wildlife Services personnel are specially trained and permitted to harass wildlife, and their activities are not approved for everyone working on the airfield.

Contractors will minimize wildlife attractants by:

- NEVER feeding or leaving food out for wildlife
- Not keeping food or food waste (including wrappers) in open vehicles
- Controlling trash
- Securing stockpiles and building materials, on the ground or in vehicles. Keep in mind that wildlife may be attracted to shiny objects, insulating materials, or perches.
- Minimize ponding and puddling in the construction area, to minimize attractions to dabbling or sea birds
- Maintain fence integrity, to the best of the Contractor's ability, to prevent access by deer, dogs and bears, etc.

8.0 FOREIGN OBJECT DEBRIS MANAGEMENT

All construction personnel will secure all items that may be carried by wind onto an AOA. All construction vehicle drivers will enter AOA paved areas from local streets only; construction vehicles will not transverse from non-paved surfaces to AOA paved surfaces. The Contractor will immediately sweep or otherwise remove any Foreign Object Debris (FOD) located on an AOA paved surface. Materials capable of creating FOD must be continuously removed during the construction project.

9.0 INSPECTION REQUIREMENTS

9.1 Daily Inspections

Operations Officers conduct two daily airfield inspections. These inspections include an inspection of all airfield-paved areas and safety areas to ensure compliance with Federal Aviation Regulation (FAR) Part 139.327.

9.2 Final Inspections

Prior to opening work areas and pavement to aircraft operations the Contractor must coordinate with airport operations for inspection of work area. Pavements must be free of all dirt, sand, gravel, wire bristles or any other objects that could cause damage to aircraft engines. All soil areas must be free of dirt clods, ruts, or surface irregularities that could damage an aircraft should it leave the pavement. Daily

inspections must be completed to assure all traffic control devices are in proper location and working together.

10.0 UNDERGROUND UTILITIES

The Contractor will request locates from all the utilities having facilities in the project area. The FAA has various navigational aids and other equipment in operation at JNU. There may be FAA cables and equipment that are not shown on the construction drawings. The Contractor will contact the FAA for locates prior to excavation and/or stockpiling as appropriate.

Where the Contractor's operations meet any of the following conditions, the Contractor will advise the owning utility in writing at least 24 hours in advance of the work.

- Operations anticipated within 10 feet of an overhead electrical line.
- Operations anticipated to be within three feet of an underground electrical line according to locates provided by the owning utility.
- Operations requiring use of equipment that is capable of coming within 10 feet of an overhead electrical line.

The notice will indicate the location and duration of the work to be performed.

The Contractor will provide an attendant whose sole responsibility is to perform as a safety observer while equipment is operating such that any part is capable of reaching within 15 feet of an overhead line or the equipment is digging within 3 feet of a buried electrical line.

All existing utilities in service at the start of the project will remain in service. The Contractor will be required to repair any damage caused to utilities by the Contractor's operations at no cost to JNU.

There may be various utility appurtenances located within the project limits. The Contractor is required to cooperate with the utilities and coordinate his work schedule to allow them access to the project for their adjustments and/or relocations.

The Contractor is required to work around aboveground and underground utility facilities, either existing or relocated, throughout the project unless advised by the utility that the facility is abandoned in place.

Relocation or adjustment of underground utility appurtenances will not normally be performed when the ground is frozen. In addition, the utilities may prohibit the Contractor, through the Engineer, from working near the utility's facilities when the ground is frozen.

11.0 PROTECTION OF TAXIWAY SAFETY AREAS

Work cannot occur on an active surface. The OFA and airspace are the setbacks for work in the vicinity of an open taxiway. No equipment within these limits without clearance from the ASCO. Exceptions to these construction limitations may occur only with permission of the ASCO and after the proper NOTAMs have been issued.

11.1 Taxiway Safety Area

The safety area for TW A, B, C, D, E, E-1, F, and G are all 118 feet wide (centered on the taxiway centerline). The safety area for TW B-1 is 79 feet wide (centered on the taxiway centerline). No construction may occur within the taxiway safety area while the taxiway is open for aircraft operations.

11.2 Taxiway Object Free Area

The OFA for TW A, B, C, D, E, E-1, F, and G are all 186 feet wide (centered on the taxiway centerline). The OFA for TW B-1 is 131 feet wide (centered on the taxiway centerline). Construction cannot occur within the OFA while the taxiway is open for aircraft operations.

12.0 SPECIAL CONDITIONS

There are no special conditions to be considered as part of the construction safety plan.

13.0 PENALTIES

Penalties exist to punish those who violate airport security and driving regulations. Penalties can include loss of airport badge, loss of driving privileges, fines, imprisonment, and impoundment of vehicle. JNU will stop work if construction operations are not in compliance with the construction safety plan.

APPENDIX C

Construction Surveying Requirements



**Alaska
Department of
Transportation
and
Public Facilities**

**Alaska
Construction
Surveying
Requirements (US
Customary Units)**

Alaska Construction Surveying Requirements (US Customary Units)

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1. Survey accuracy requirements

Third order survey

- ✓ Use a 1/5000 horizontal closure.
- ✓ Use an angle closure of $30\sqrt{N}$ seconds, where N equals the number of angles in the traverse.
- ✓ An Alaska-registered professional land surveyor must perform or supervise replacement of survey monuments (property, USGS, USC&GS, BLM, etc.) or establishment of monuments (including centerline).
- ✓ All monument work must comply with AS 34.65.040 and meet standards in the latest version of the Alaska Society of Professional Land Surveyors' *Standards of Practice Manual*.
- ✓ The allowable vertical error for misclosure is $e = 0.05\sqrt{M}$ e = maximum misclosure in feet, M = length of the level circuit in miles.

Table 1—Survey accuracy requirements (in feet)

	Stationing	HI	Closure	Horizontal Angle	Distance To center line	Grade
Additional cross sections	1.0	0.01	0.04	**	0.1	0.1
Benches		0.01	0.02			
Blue tops***	1.0	0.01	0.04		0.1	0.02
Bridges	*	0.01	0.02			0.01
Centerline	*			*		
Clearing & Grubbing	1.0				1.0	
Culverts	1.0	0.01	0.04	**	0.1	0.1
Curb & gutter	1.0	0.01	0.02		0.1	0.02
Grade stakes	1.0				0.1	0.1
Guardrail	1.0				0.1	
Manholes, catch basins & inlets	1.0	0.01	0.02		0.1	0.02
Monuments	*			*		
Red tops***	1.0	0.01	0.02		0.1	0.05
Riprap	1.0	0.1	0.04		1.0	0.1
Signs	1.0				0.1	
Slope stakes & RP's	1.0	0.01	0.04	**	0.1	0.1
Under drains & sewer	1.0	0.01	0.02		0.1	0.02

* Third order survey

**Right angle prism or transit angles from center line

*** Use blue tops for top of base course and red tops for the bottom of base course.

1. Survey frequency requirements

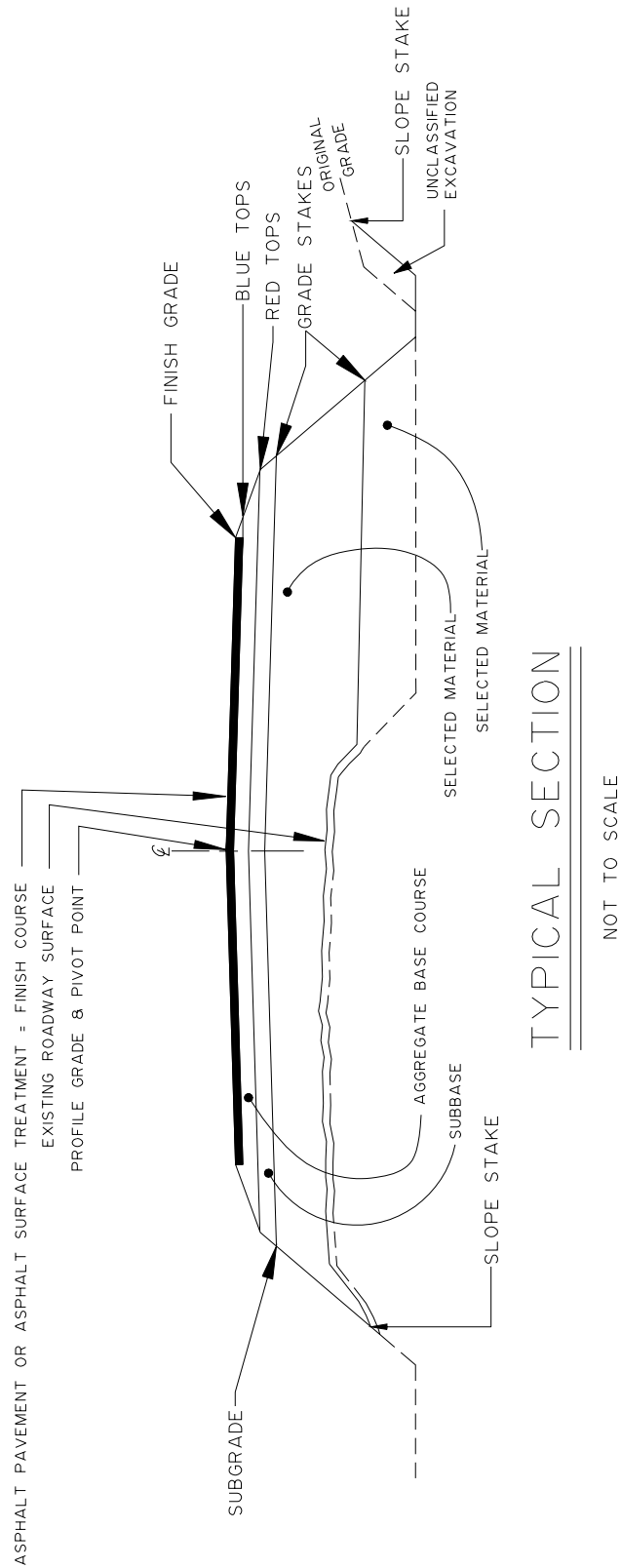
Table 2—Survey frequency requirements (in feet)

	Tangents	Curves	Interchange ramps	Stake each per plan	See special instructions on sample notes
Additional cross sections	*	*	*		
Bench marks					X
Blue tops	100	100**	25		X
Blue tops within 100 feet both sides of railroad track crossings and bridge approaches	25	25	25		X
Bridges				X	X
Center line	100	100**	25		
Clearing	100	100**	25		X
Culverts				X	X
Curb and gutter	25	25	25		
Grade stakes	100	100**	50		
Guardrail	25	25	25		
Manholes, catch basins & inlets				X	
Monuments				X	
Red tops	100	100**	25		X
Riprap	50	50	50		
Signs				X	
Slope stake / cross sections	100	100**	25		X
Under drains and sewers	50	25	25		

* Establish additional cross sections and slope stakes at all breaks in topography and where structures begin and end.

**Curves shall be staked on 50-foot stations if the curve is greater than six degrees.

2. Typical Section Drawing



3. Survey point materials requirements

- ✓ These are minimum requirements; larger sizes may be necessary.
- ✓ Use only stakes with planed sides.

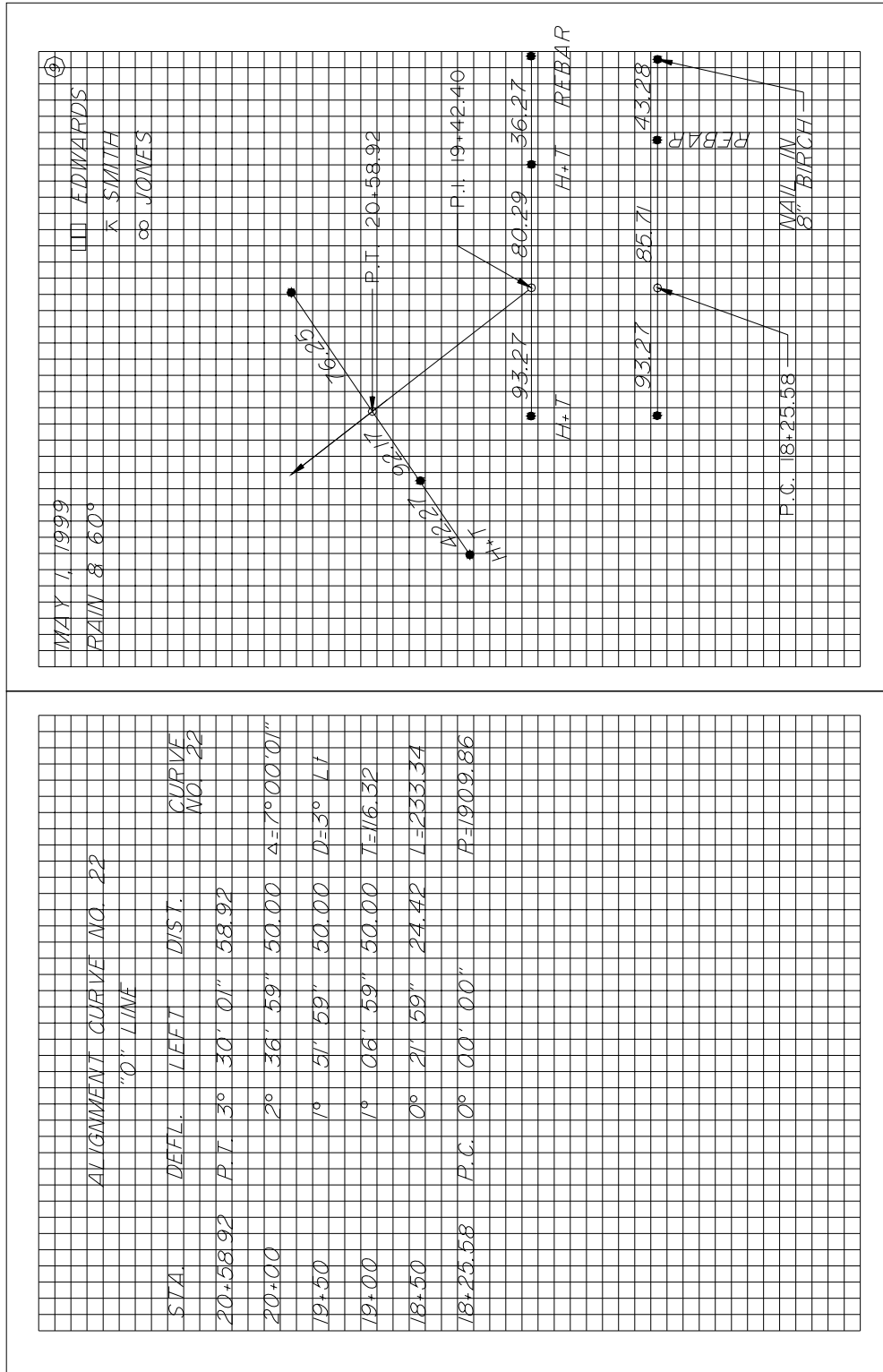
Table 3—Survey point materials requirements

	24" lath or whiskers	2" x 2" x 8" hub	2" x 2" x 12" hub	1" x 2" x 18" stake	1" x 2" x 24" stake	48" lath	Hub and tack	40d nail	60d nail	1/2" x 24" rebar
Benchmarks									X	
Blue tops	X	X								
Centerline P.C., P.T., P.O.T.			X	X			X *			X *
Centerline reference points			X	X			X *			X *
Centerline station				X				X		
Clearing						X				
Culvert stake			X		X	X				
Culvert stake references			X		X	X				
Curb and gutter			X		X		X			
Guardrail								X		
Major structures			X	X *	X *	X	X *			X *
Red tops	X	X								
Signs						X				
Slope stake					X	X				
Slope stake references			X		X	X				

* Optional depending on conditions, and to be determined by the Project Engineer.

4. Typical alignment notes

- ✓ The Chief of Parties must prepare the alignment book before actual staking.
- ✓ Don't use swing ties for reference points.
- ✓ Use three point right angle ties, two to the right and one left, or vice versa.
- ✓ Reference P.C., P.I., P.T., and P.O.T.



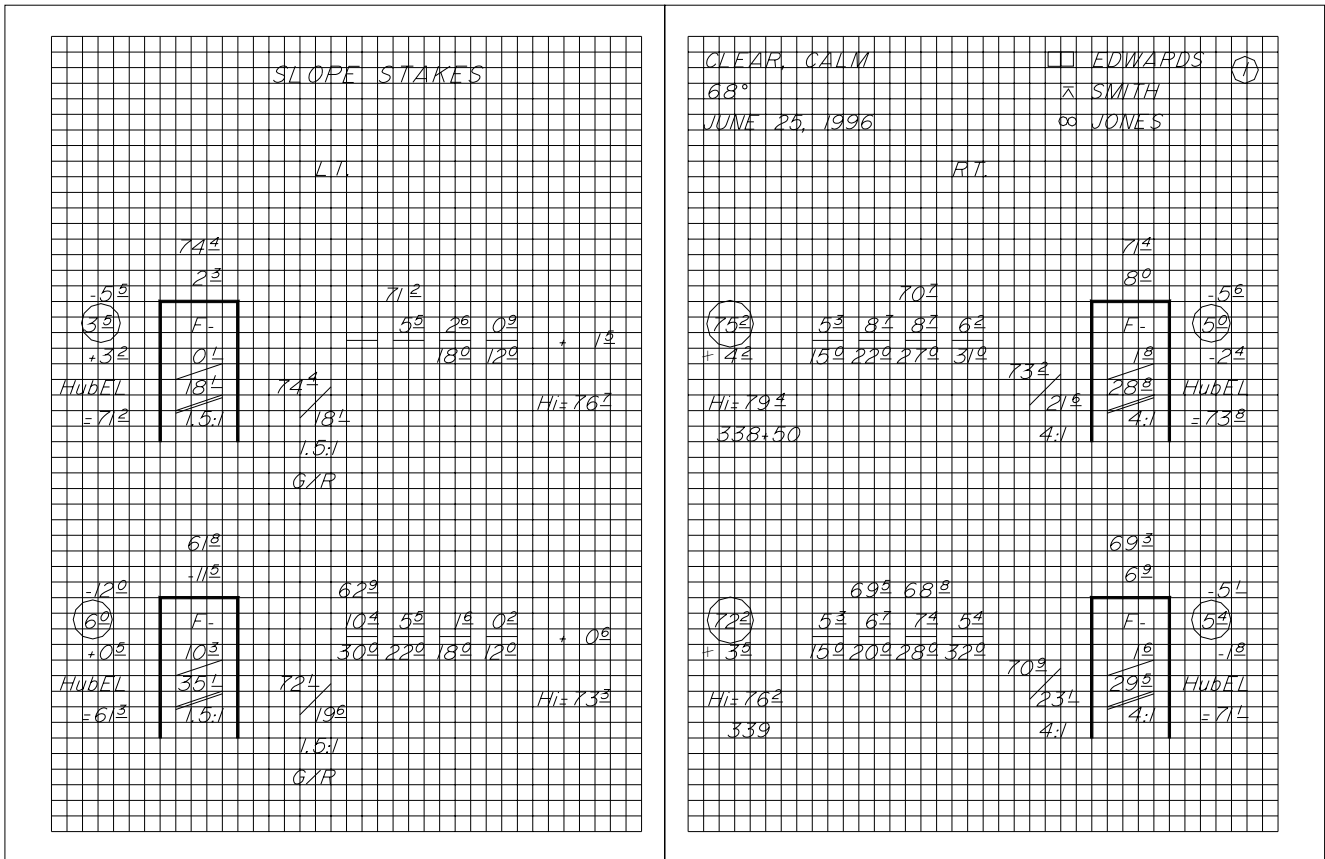
6. Typical level notes

- ✓ Balance back sights and foresights.
- ✓ Establish all benchmarks and take the centerline profile before doing any staking involving elevations.
- ✓ Don't set benchmarks in utility poles.
- ✓ Don't use side shots on benchmarks.
- ✓ Use the turn through method when establishing benchmarks.
- ✓ Re-check benchmarks after each major freeze/thaw cycle and/or any environmental event that may change the benchmark elevation.
- ✓ Do not use double rodding.
- ✓ Run separate level loops between all benchmarks.
- ✓ Set benchmarks in trees of at least six-inch diameter, unless approved by the Project Engineer.
- ✓ Correct errors in benchmark elevations so they will not affect the elevations of succeeding benchmarks.
- ✓ Consult with the Project Engineer before placing benchmarks in areas of permafrost or other unstable ground.
- ✓ Establish benchmarks at intervals and locations consistent with good engineering practice, and generally not more than 1000 feet.
- ✓ Completely describe benchmarks when establishing or re-establishing their elevation. Give centerline stationing, offset, benchmark projection, and observable benchmark characteristics. When checking into or out of benchmarks, note the book and page number that contains the most recent elevation establishment for that benchmark.
- ✓ Write the station on the top twelve inches facing centerline, with numerals a minimum of one inch in height.

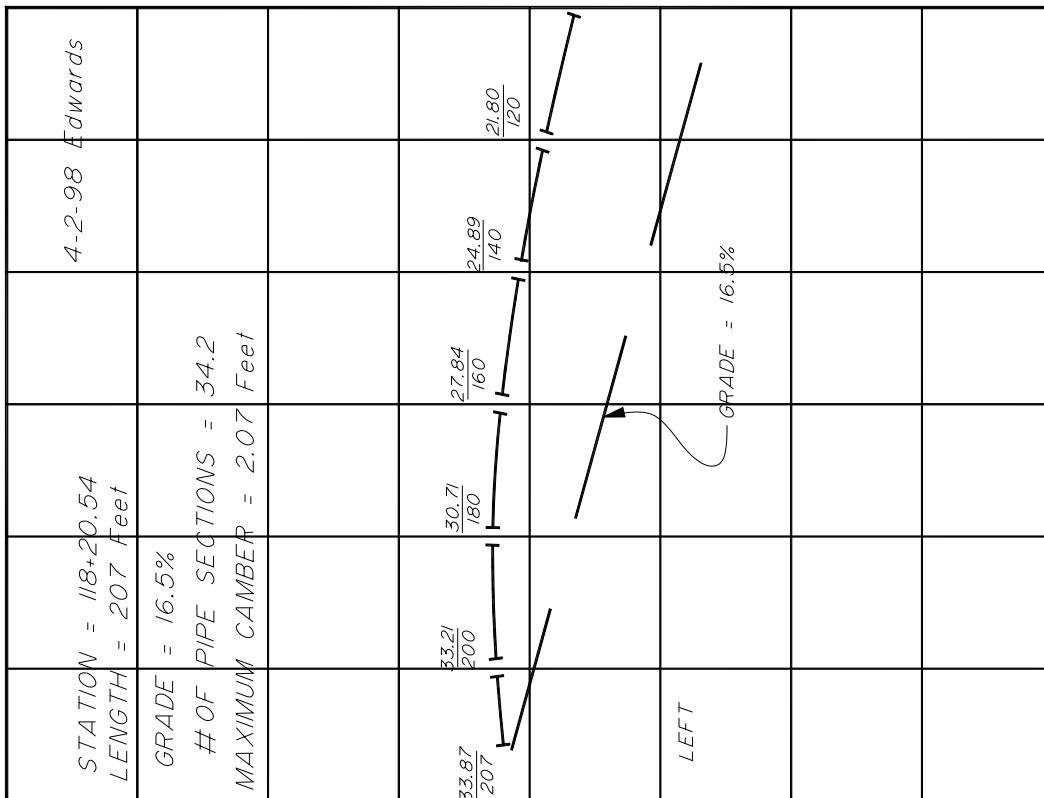
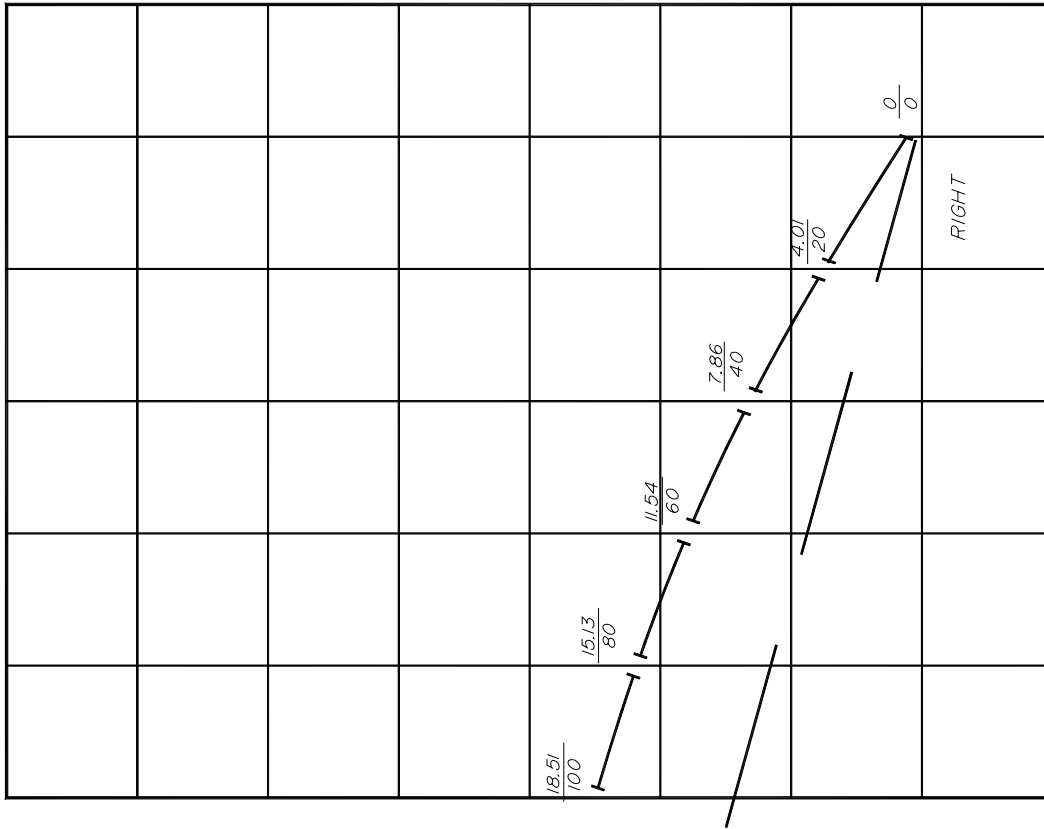
STA.	BS+	HI	FS-	ELEV.	45'± CLEAR WARM CALM			⊗ □	EDWARDS
					WILD 413579	3-23-90		⊕	SMITH
TBM #101 6+72				161.309	Nail in base of 12" Spruce				
	3.877	165.186			85' 10" LT.				6+72
6+00			1.95	163.24					
6+25			2.32	162.87					
6+50			2.96	162.23					
T.P.			3.246	161.940					
	1.103	163.043							
6+75			2.31	160.73					
7+00			2.56	160.48					
T.P.			2.823	160.220					
	2.332	162.552							
					Nail in base of 18" stump				
TBM #102			1.143	161.409	60' 4" RT	7+21			Elev. 161.413

7. Typical slope stake notes

- ✓ Enter the station, elevations, shoulder distance or ditch distances, and slope in the slope stake book before staking begins.
- ✓ In areas where slides or overbreak are anticipated, extend the sections beyond the construction limits.
- ✓ Slope-stake each section that is cross-sectioned.
- ✓ Final re-cross sections are required where there are overbreaks, undercuts, etc. Re-cross section book and page numbers shall be noted on the original cross-section and slope staking page for the relevant stations.
- ✓ Include at least the following information on the stake: (1) where to begin the cut or fill (2) the slope ratio (3) the depth of cut or height of fill and (4) the station.
- ✓ Use a hand level only for one turn up or down from the instrument.
- ✓ Clearly note hand level turns.
- ✓ Use a reference point that is 10-20 feet beyond the slope stake.
- ✓ The reference point must show the cut or fill to the slope stake and must include the slope stake information.
- ✓ Slope stake all abrupt changes in typical sections.
- ✓ Position all laths to face centerline.



9. Typical culvert camber diagram

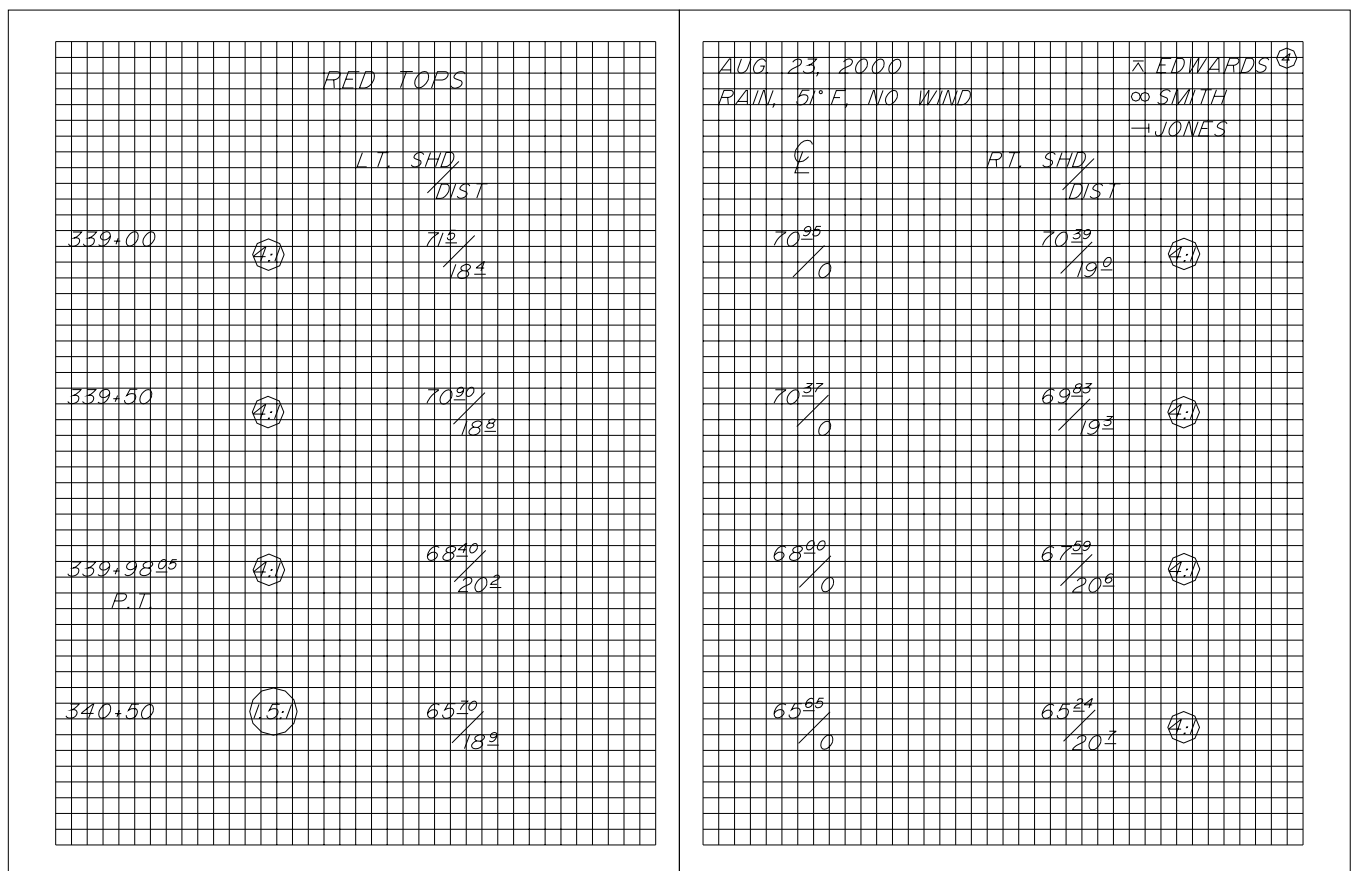


STATION = 118+20.54
 LENGTH = 207 Feet
 GRADE = 16.5%
 # OF PIPE SECTIONS = 34.2
 MAXIMUM CAMBER = 2.07 Feet

4-2-98 Edwards

10. Typical blue or red tops and grade stake notes

- ✓ Place blue and red tops at each break in typical section and on centerline.
- ✓ Use blue tops for top of base course.
- ✓ Use red tops for the bottom of the base course.
- ✓ Evenly space red/blue tops at and between crown section break points with a maximum spacing of 25 feet between red/blue tops.
- ✓ Establish horizontal control from centerline references and vertical control from benchmarks.
- ✓ Place blue tops at the same interval as slope stakes.
- ✓ Stake all curve transitions.



APPENDIX D

Materials Sampling and Testing Frequency

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency					Page 1 of 8
Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Excavation	Acceptance	(5)	Gradation, P.I., Moisture (or visual description if organic)	1 per 5,000 C.Y. waste or undesignated waste cut	For unsuitable excavation number consecutively EX-W-1. No need to test if waste is designated on plans
Embankment	Acceptance	(5)	Standard Density	As required by changes in material	Number consecutively BM-SD-1 or EX-SD-1
			Field Density	1 per 1,500 C.Y. or 1 per 3,000 Tons (6)	Number consecutively BM-D-1 or EX-D-1.
			Gradation, P.I. (4) and Deleterious (visual)	1 per 5,000 C.Y. or 1 per 10,000 Tons (6)	Number consecutively BM-G-1 or EX-G-1.
	Independent Assurance	(5)	Standard Density (2)	1 per source	Use numbers that correspond to acceptance samples. Include field test results with sample.
			Field Density (1)	1 per 15,000 C.Y. or 1 per 30,000 Tons	
			Gradation and Deleterious (visual)	1 per 50,000 C.Y. or 1 per 100,000 Tons	
Bedding & Backfill for Structures (Drainage Items, Ducts, Conduits, etc.)	Acceptance	(5)	Standard Density	As required by changes in material	Use numbers that correspond to acceptance samples. Include field test results with sample.
			Field Density	(1) (3)	
			Gradation, P.I., and Deleterious (visual)	1 per source or as required by change in material	
<p>General: Independent Assurance (IA) Testing may be waived when Acceptance Testing is performed in DOT&PF Regional Laboratories accredited in the specified test method. When DOT&PF Regional Laboratories perform Acceptance Testing, they may also perform the IA Testing if using different personnel and equipment than was used for the Acceptance Testing.</p> <ol style="list-style-type: none"> 1) If material is Too Coarse to Test (TCTT) for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form. IA Testing is not required when material (as shown by gradation testing) is TCTT. Any material can be rejected based on failure to meet any one of the criteria. 2) Required when Standard Density test is run in the project laboratory. 3) One density per structure (pipe, conduit, manhole, catch basin, inlet, utility vault, etc.), with a minimum of one density per 100 lineal feet of structure installed same day and same manner. Perform densities within 18 inches of the structure or outside diameter of the pipe. Frequency may be reduced to 1 per 200 lineal feet for electrical conduits when approved by Regional Quality Assurance Engineer (RQE) or Regional Materials Engineer (RME). 4) Perform Plasticity Index (P.I.) tests on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional acceptance tests need only be performed when IA samples are taken. The RQE or RME may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic. 5) See the specified test method for minimum sample size. 6) For large unclassified embankments, a field density and gradation testing frequency of 1/10,000 C.Y. or 1/20,000 Tons is acceptable subject to the approval of the RQE, RME or Statewide Materials Engineer (SME). 					

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency					Page 2 of 8
Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Subbase Course	Source Quality	150 lbs.	L.A. Wear, Degradation	1 per source prior to use or as required based on change in material	Allow minimum of 14 days for testing and transport. Number consecutively Q-SB-1 or Q-SC-1
	Acceptance	(6)	Standard Density	1 per source and as required based on change in material	Number consecutively SB-SD-1
			Field Density (1)	1 per 1,000 CY or 1 per 2,000 Tons	Number consecutively SB-D-1
			Gradation, L.L. P.I., Deleterious	1 per 2,500 CY or 1 per 5,000 Ton (3)	Number consecutively SB-G-1
	Independent Assurance	(6)	Standard Density (2)	1 per source	Use numbers that correspond to acceptance samples. Include field test results with sample.
			Field Density (1)	1 per 10,000 CY or 1 per 20,000 Tons	
Gradation, Deleterious, L.L., P.I.			1 per 25,000 CY or 1 per 50,000 Tons		
Aggregate Surface Course and Crushed Aggregate Base Course	Source Quality	150 lbs.	L.A. Wear, Degradation, Soundness	1 per source prior to use or as required based on change in material	Allow minimum 14 days for testing and transport. Number consecutively Q-SC-1 or Q-BC-1
	Acceptance	(6)	Standard Density	1 per source and as required based on change in material	Number consecutively SC-SD-1 or BC-SD-1
			Field Density	1 per 500 C.Y. or 1 per 1,000 Tons	Number consecutively BC-D-1 or SC-D-1
			Gradation, Fracture, Deleterious, L.L., P.I., SE	1 per 1,000 C.Y. or 1 per 2,000 Tons (3) (4) (5)	Number consecutively BC-G-1 or SC-G-1
	Independent Assurance	(6)	Standard Density	1 per source	Use numbers that correspond to acceptance samples. Include field test results with sample
			Field Density (2)	1 per 5,000 C.Y. or 1 per 10,000 Tons	
Gradation, Fracture, L.L., P.I., SE, Deleterious			1 per 10,000 CY or 1 per 20,000 Tons		
<p>(1) If material is impractical to test for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form. IA density testing is not required when material (as shown by gradation testing) is TCTT.</p> <p>(2) Required when Standard Density is run in project laboratory.</p> <p>(3) Perform Liquid Limit (L.L.) and P.I. tests on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional acceptance tests need only be performed when IA samples are taken. The RQE or RME may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.</p> <p>(4) Fracture: If the first ten tests indicate the fracture to be 5% or more above specification, additional acceptance tests need only be performed when IA samples are taken.</p> <p>(5) If the first five tests indicate the material meets specification for Sand Equivalent (SE), additional acceptance tests need only be performed when IA samples are taken. The SE test is not required for Aggregate Surface Course.</p> <p>(6) See the specified test method for minimum sample size.</p>					

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency						
Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks	
Plant Hot Mix Asphalt and Asphalt Treated Base Course	Source Quality	150 lbs. Aggregate	L.A. Wear, Degradation, Sodium Sulfate Loss	1 per source prior to use or as required based on changes in material	Allow 25 days for testing and transport	
	Mix Design	500 lbs. (7) Aggregate	Mix Design (1) (2) Sand Equivalent (SE), Flat & Elongated (F&E), Fracture, L.L., P.I.	1 per source and as required based on changes in material	Allow 15 days or contract specified time for mix design and testing after receiving contractor's proposed gradation.	
		5 one gallon. cans of AC,				
		1 pint of Anti-strip				
	Acceptance	(1) (8)		MSG (Maximum Specific Gravity)	1 per Lot (1) (9)	From Mix Design for the first lot and then from the first subplot of each additional lot
				Mat Density, Gradation, Oil Content, L.L., P.I., Fracture, F&E, SE, Deleterious, Thickness	1 per subplot (3) (4) (5) (6) (9)	Ross Count (AASHTO T 195, Coating Test) as required by RQE or RME.
				Joint Density	(1) (9)	Top Lift (1)
	Independent Assurance	(8)		MSG	1 per project minimum (1)	Required when MSG is run in the field.
				Mat Density, Gradation, Oil Content, L.L., P.I., Fracture, F&E, SE	1 per 10 sublots	Use numbers that correspond to acceptance samples. Include field test results with sample
	Information	30 lb		3-Marshall Biscuits or 2-gyratory samples	1 per Mix Design Minimum	Compare results to Mix Design.

- (1) Refer to project specifications.
- (2) Recommendations regarding anti-strip requirements must be determined for each mix design.
- (3) Perform L.L. and P.I. tests on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional acceptance tests need only be performed when IA samples are taken. The RQE or RME may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.
- (4) Fracture: If the first ten tests indicate the fracture to be 5% or more above specification, additional acceptance tests need only be performed when IA samples are taken.
- (5) SE: If the first five tests indicate the material meets specification for SE, additional acceptance tests need only be performed when IA samples are taken.
- (6) Perform Flat and Elongated (**F&E**) tests on the first five samples from any source. For known sources, the RQE or RME may waive this requirement.
- (7) For multiple stockpiles, proportion each stockpile sample to the proposed Job Mix Design blend ratio.
- (8) See the specified test method for minimum sample size.
- (9) May not be applicable to Asphalt Treated Base Course. Refer to project specifications.

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency					Page 4 of 8
Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Asphalt Cement	Source Quality	See Remarks	(1)	1 per each grade and source prior to use	Manufacturer's certification required
	Acceptance (1)	Three 1-quart cans		1 per 50,000 gals. or 1 per 200 Tons	Sampled on project. Test for anti-strip if required by RQE or RME.
Liquid Asphalt for: a. Prime Coat b. Tack Coat c. Seal Coats d. Asphalt Surface Treatment	Source Quality	See Remarks	Type and Grading	1 per each grade and source prior to use	Manufacturer's certification required
	Acceptance	1 gallon in plastic jug (for emulsified asphalt)	(1)	1 per 50,000 gallons or 1 per 200 Tons	Sample must be tested by Lab that did not test material for Quality. Material sampled prior to dilution
Aggregate for Seal Coats and Asphalt Surface Treatments	Source Quality	150 lbs. Aggregate	Fracture, F&E, L.A. Wear, Soundness, Degradation	1 per source prior to use or as required by changes in material prior to use	Allow 25 days for testing and transport
	Acceptance	(4)	Gradation, Fracture, F&E, Deleterious (visual)	1 per 500 Tons (2) (3)	May be taken from stockpile or production
	Independent Assurance		Gradation, Fracture, F&E, Deleterious (visual)	1 per 5,000 Tons	May be taken from stockpile or production
<p>(1) Refer to project specifications. (2) Fracture: If the first ten tests indicate the fracture to be 5% or more above specification, additional acceptance tests need only be performed when IA samples taken/tested. (3) Perform F&E tests on the first five samples from any source. For known sources, the RQE or RME may waive this requirement. (4) See the specified test method for minimum sample size.</p>					

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency					
Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Portland Cement Concrete	Source Quality				
a. Cement and Cementitious	Quality	a. Two 1-gal cans, each	See Remarks	1 per shipment (2) (4)	Allow 40 days for testing and transport. Manufacturer's certification required
b. Water		b. ½ gal in glass jar	See Remarks	1 per source	Allow 20 days for testing or potable water accepted by Project Engineer.
c. Coarse Aggregate		c. 100 lbs	Deleterious Substances, L.A. wear, Soundness	1 per source	Allow 25 days for testing and transport.
d. Fine Aggregate		d. 25 lbs	Deleterious Substances, Soundness	1 per source	Allow 25 days for testing and transport.
Portland Cement Concrete	Mix Design Submittal (1) (3)				
a. Cement and Cementitious	Mix Design	a. 94 lbs., each	Mix Design Verification as required by RQE or RME	1 per source prior to use	For verification of Contractor-furnished mix design, allow 40 days for testing and transport
b. Water		b. None			
c. Coarse Aggregate		c. 330 lbs			
d. Fine Aggregate		d. 220 lbs			
e. Admixtures		e. 1 qt each			
<p>(1) Refer to project specifications. (2) Cement stored in silos or bins over six months, or in bags over three months, may require re-testing. See project specifications. (3) Manufacturer's certifications and aggregate test reports required. (4) Manufacturer's Certification for cement used on project may be accepted in lieu of sampling as approved by the RQE or RME</p>					

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency						Page 6 of 8
Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks	
Concrete Continued:						
Coarse Aggregate	Acceptance	(5)	Gradation and; Deleterious (visual)	1 per 200 C.Y.	Number consecutively CA-G-1	
Fine Aggregate			Gradation, Deleterious (visual), Fineness Modulus	1 per 200 C.Y.	Number consecutively FA-G-1	
Mix		As required by test method	Temperature, Slump, % Air, Water/Cement Ratio, Unit Weight, Yield, Proportions per C.Y.	1 per ½ days pour (2) or 1 per 200 C.Y.	(3)	
		Cylinders or beams	Compressive strength or Flexural strength (1)	1 per ½ days pour (2) or 1 per 200 C.Y.	Mold two (6x12) or three (4x8) cylinders or 2 (6x6x20) beams. Test at 28 days. (1) (4)	
	Information	Cylinders or beams	Compressive strength or Flexural strength	As required (e.g. for 7 day break)	Mold two (6x12) or three (4x8) cylinders or 2 (6x6x20) beams "As Required" for Strength Data.	
Coarse Aggregate	Independent Assurance	(5)	Gradation and; Deleterious (visual)	1 per 2,000 C.Y. with minimum of 1 per project if over 100 C.Y. is placed	Use numbers that correspond to acceptance samples. Include field test results with sample.	
Fine Aggregate			Gradation, Deleterious (visual), Fineness Modulus			
Mix		As required by test method	Temperature, Slump, % Air, Water/Cement Ratio, Unit Weight, Yield, Proportions per C.Y.	1 per 2,000 C.Y.	Mold two (6x12) or three (4x8) cylinders or 2 (6x6x20) beams	
		Cylinders or beams	Compressive strength or Flexural strength	1 per 2,000 C.Y.		
<p>(1) Refer to project specifications.</p> <p>(2) Half day's pour considered to be 6 hours or less.</p> <p>(3) Commercial sources which are periodically inspected do not have to be tested if day's total quantity of concrete placement is less than 5 C.Y. as determined by the Project Engineer. Placement reports summarizing all minor pours will be completed.</p> <p>(4) For non-structural or minor concrete construction, as determined by the RQE or RME, 1 set minimum per project is recommended.</p> <p>(5) See the specified test method for minimum sample size.</p>						

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency						Page 7 of 8
Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks	
Misc. Hardware	Source Quality	(1)		1 per pay item or assembly, min.	Approved by designated authority; reference MCL	
Concrete Reinforcing Steel	Source Quality	(2)		1 for each type, grade and size in a shipment	Approved by designated authority; reference MCL	
Joint Sealer, Joint Filler, and Curing Materials for Concrete	Source Quality	1 Quart for each liquid (see remarks)	(1) See remarks	1 per type	Project Engineer documentation if on QPL. If not on QPL, manufacturer's certification or sample for testing.	
Porous Backfill	Acceptance	(3)	Gradation, Deleterious (visual)	1 per source or as required by change in material	Number consecutively PB-G-1	
Topsoil	Source Quality	15 lbs.	Organic content, Gradation, pH	1 per source prior to use or as required by changes in material	Allow 15 days for testing and transport	
	Acceptance	(3)	Gradation	1 per 15,000 Square Yards or 1 per 2,500 cubic yards	Number consecutively TS-G-1	
Signals and Lighting	Quality and Acceptance	Within 30 days following award of the contract, the contractor shall submit to the Project Engineer for approval a complete list of material and equipment that is proposed to be used for this item. The data shall include catalog cuts, diagrams, test reports, manufacturers' certifications, etc. The above data shall be submitted in eight sets. Any proposed deviation from the plans shall also be submitted.				
<p>(1) Certificates of Compliance per Specifications GCP- 60.</p> <p>(2) Mill Test Reports to include heat numbers, fabrication date, physical and chemical properties.</p> <p>(3) See the specified test method for minimum sample size.</p>						

Acceptance of Minor Quantities and Installations

- A. Portland Cement Concrete.** Concrete for the following items **may** be accepted on the basis of an approved mix design and placement reports documenting batch information and pour location, time, and quantity. Under this system arrangements should be made for the producer to state on the delivery ticket accompanying each load of concrete, the class of concrete being furnished, the weights of cement, aggregates and water used in the batch, and the time of batching. Use only State-tested aggregates and cement, or supplier certified cement, approved by the RQE, RME, or Statewide Materials Engineer (SME). Each pour must be documented on a Concrete Placement Report.
1. Sidewalks - not to exceed 150 square yards per day.
 2. Curb and gutter, not to exceed approximately 250 lineal feet per day
 3. Slope paving and headers.
 4. Paved Ditches and flumes.
 5. Manhole bases, Catch Basins, Inlets and Inspection Holes.
 6. Small culvert headwalls and Miscellaneous Drainage Structures.
 7. Fence Post Footings.
 8. Sign Post footings.
 9. Cable Markers
- B. Small Quantities of Miscellaneous Materials.** The primary documentation of delivery and placement may be the Project Materials Report.
1. Aggregates—not to exceed 500 Tons per item per project.
 2. Asphalt/Aggregate Mixtures—not to exceed 1,500 Tons per approved mix design per project.
 3. Asphalt Cement—not to exceed 85 Tons or 15 Tons for other liquid asphalt per project.
 4. Paint—not to exceed 20 Gallons per project. Acceptance to be based on weights and analysis on the container label.
 5. Masonry Items—Subject to checking of nominal size and visual inspection. Not to exceed 100 pieces.
 6. Plain concrete or clay pipe— not to exceed 100 lineal feet.
 7. Topsoil—not to exceed 600 square yards.