SECTION 31 25 00 – EROSION, POLLUTION AND WATER CONTROL

1. GENERAL
	* + 1. SUMMARY
				1. Section Addresses:

Minimizing the pollution of air, water, or land; control of noise, the disposal of solid waste materials, and protection of deposits of historical or archaeological interest.

Employ and utilize environmental protection methods, and fully observe all local, state, and federal regulations and permits.

* + - * 1. Section Includes:

Erosion, Pollution and Water Control shall consist of providing construction operations that avoid or minimize damage to adjacent or resident natural resources, avoid air and noise pollution, and otherwise prevent environmental impacts.

* + - 1. QUALITY ASSURANCE
				1. Referenced Standards

MaineDOT manual on Best Management Practices for Erosion and Sedimentation Control (2008), http://www.maine.gov/mdot/env/docs/bmp/BMP2008full.pdf.

MaineDEP manual: Maine Erosion and Sediment Control Practices Field Guide for Contractors (2014), https://www.maine.gov/dep/land/erosion/escbmps/esc\_bmp\_field.pdf

* + - 1. SUBMITTALS
				1. Final draft of the Soil and Water Erosion and Pollution Control Plan (SWEPCP), including a Spill Prevention Plan designed to avoid stream impacts from hazardous chemicals, such as diesel fuel, oil, lubricants, and other hazardous materials. These plans shall be submitted as part of the Construction Operations Plan (See Section 01 71 13).
				2. Final draft of the Erosion Control Plan submitted with NOI if required to obtain coverage under the Maine General Construction Permit.
				3. Water Management Plan must be submitted to the project Engineer and Owner for approval prior to the commencement of Work. This includes management of active flows and/or management of localized water within the construction area. This plan shall be submitted as part of the Construction Operations Plan (See Section 01 71 13).
				4. Erosion Control Blanket material certification.
1. PRODUCTS
	* + 1. EQUIPMENT
				1. Work shall be completed in conditions free of actively-flowing water. If necessary, diversion and bypass of in-stream flows shall use temporary dams, gravity or pumped diversion pipelines or open conveyances, and upland discharge or other methods.
				2. Dewatering from the work area may include the use of sump pumps, temporary pipelines for water movement, rock or gravel placement, and other methods.
			2. MATERIALS
				1. Oil absorbent booms

Shall be 5-inch diameter, minimum, and constructed of an outer mesh that encapsulates oil absorbent filler material.

Shall be capable of absorbing all hydrocarbons including, oil, gasoline, diesel and lubricating oils.

Shall not sink when saturated with oil.

* + - * 1. Silt Fence.

Install and remove the silt fence as shown on the Drawings and as recommended by the manufacturer, in accordance with all applicable laws and regulations.

Care shall be taken to maintain the silt fence in a functional condition at all times during the construction period.

* + - * 1. Erosion control materials.

Erosion control blanket shall be North American Green (NAG) style C125BN 100% biodegradable coconut fiber mat or equivalent. This material shall meet or exceed the following criteria:

|  |  |  |
| --- | --- | --- |
| Parameter | Procedure/Test | Criterion |
| Thickness | ASTM D6525 | 0.28 inches |
| Transverse Direction Tensile Strength | ASTM D6818 | 222 lbs |
| Transverse Direction Elongation | ASTM D6818 | 14.3% |
| Machine Direction Tensile Strength | ASTM D6818 | 141 lbs |
| Machine Direction Elongation | ASTM D6818 | 14% |
| Mass/Unit Area | ASTM D6475 | 8.83 oz./sq.yd |
|  |  |  |
| Roll Width | Measured | 6 feet - 8 inches |
| Roll Length | Measured | 108 feet  |

1. Wattles shall be 9 inch diameter, 7 pound density North American Green style 08CN7 100% biodegradable coconut fiber coir or excelsior wattles (logs) or equivalent. The wattles should meet or exceed the following criteria:

|  |  |
| --- | --- |
| Parameter | Criterion |
| Density | 7 lbs/ft3 |
| Flow Velocity | 5 ft/sec |
| Diameter | 8 inches |
| Standard Length | 10 feet |

1. Wood Stakes
	1. Stakes shall be wooden stakes solid and free of knots or defects. Stakes shall be 18" in length. Stakes shall be wedge shaped with a minimum equivalent diameter equal to 1.5" at the top and should come to a point at the bottom. Stakes should be constructed by cutting a standard grade 2" x 4" lumber lengthwise along the diagonal to create wedge shaped stakes, or by some other method resulting in a stake of dimensions approved by the Engineer. Additional details are provided in the Drawings.
2. Wood Staples
	1. Staples shall be 12 inches in length, untreated wooden staples solid and free of knots or defects.
	2. Pre-approved: North American Green EcoSTAKES (12”) are pre-approved.
3. Seed
	1. Material requirements for Seed are specified in Section 32 90 00 Site Plantings.

PART 3- EXECUTION

* 1. CONSTRUCTION
		+ - 1. No work requiring erosion control shall commence until the SWEPCP has been approved by the Engineer.
				2. The Contractor shall furnish, install, maintain and remove erosion and sediment control devices as shown in the Drawings.
				3. If any of the installed measures require repair or are rendered ineffective during construction, these measures shall be replaced or repaired by the Contractor and brought back to effective condition at no extra cost.

3.2 PROTECTION OF PROPERTY

* + - * 1. Land Protection:
1. Except for any work or storage area and access routes specifically assigned for the use of the Contractor, the areas outside the limits of construction shall be preserved in their present condition. Contractor shall confine his activities to areas defined for work as shown on the Drawings.
2. Manage and control all borrow areas, work or storage areas, access routes and embankments to prevent water from entering nearby water or land adjacent to the work site.
3. Restore all disturbed areas including borrow and haul areas and establish permanent type of locally adaptive vegetative cover.
4. Unless earthwork is immediately paved or surfaced, protect all side slopes and backslopes immediately upon completion of final grading.
5. Plan and execute Earthwork in a manner to minimize duration of exposure of unprotected soils.
6. Except for areas designated in the Drawings to be cleared, the Contractor shall not deface, injure or destroy trees and vegetation, nor remove, cut, or disturb them without approval of the Owner. Any damage caused by the Contractor’s equipment or operations shall be restored as nearly as possible to its original condition at the Contractor’s expense.
7. Silt fence shall be installed prior to clearing and grubbing to control sediment from leaving the project limits. The Contractor may submit alternate methods of establishing perimeter sediment control in locations where silt fence installation is deemed impractical or problematic. The Contractor shall not make this substitution without prior approval of the Engineer.
8. The Contractor shall be responsible for the removal of temporary erosion control devices once the project is completed.
9. Disturbed areas, as shown in the Drawings, shall be seeded and mulched according to the planting plan as soon as practical after completion of grading operations, but within the period specified for germination of seed.
	* + - 1. Project Access, Staging and Storage Areas

Access corridor and potential staging and storage areas are shown on the Drawings. The Contractor shall be responsible for any repairs, replacement or payment required to return any vegetation, structures, grading or other facilities disturbed in the course of this project by the Contractor, his employees or subcontractors, to the same condition as existed before the project was started. Such repairs, replacement or payment shall be at the Contractor’s expense.

* + - * 1. Haul Routes
1. The Contractor is required to determine and observe any restrictions placed on travel over public or private roads.
2. The Contractor shall be responsible for any repairs, replacement or payment required to return public or private roads damaged in the course of this project by the Contractor, his employees or subcontractors, to the same condition as existed before the project was started. Such repairs, replacement or payment shall be at the Contractor’s expense.
3. The Contractor shall be responsible for limiting spillage of spoils and other impacts from passage of haul vehicles and other operations to comply with road use requirements and to ensure a safe operating environment.
	1. CONTROL OF NOISE
		* + 1. In areas where hydraulic hammering is required, every reasonable measure shall be taken to ensure that the hammering does not occur in the active stream and in a location that is not hydrologically connected to the active stream, to prevent migration of vibration and sound effects through the water to areas where fish may be present.
				2. If it is deemed not possible to efficiently drain an area where hydraulic hammering is required, coffer dams would be used to attenuate transfer of vibrations and sound through the water.
	2. FLOW MANAGEMENT
4. The work must be conducted in the dry to the extent practical. Exceptions to instream work in the dry must follow all other regulatory requirements, including performing Earthwork in conditions free of actively-flowing water.
5. The Contractor shall perform dewatering in excavations and other work locations to facilitate completion of the work.
6. Water control shall follow these specifications, all applicable regulations, all permit conditions, and guidelines set forth in the Maine Construction General Permit. Contractor staff responsible for Stream Diversion and Dewatering shall be identified at the pre-construction conference. 24-hour emergency contact information for this staff shall be provided to the Owner.
7. The maximum rate of drawdown of the impoundment shall not exceed 0.5 feet per hour, and 2 feet per day. Rates shall be reduced as required to reduce turbidity and maximize drainage and drying of exposed sediments.
8. The Contractor shall provide all equipment and materials necessary for water control. The Contractor shall have on hand, at all times, sufficient pumping and other equipment and machinery in good working condition and shall have available, at all times, competent workers for the operation of the pumping equipment. Adequate standby equipment shall be kept available to ensure efficient operation and maintenance of diversions during power failure.
9. The Contractor is advised that the project area may be subject to groundwater recharge resulting in saturated soil conditions.
10. Fish shall be excluded and removed from the worksite before any instream work is started (with the exception of cofferdam installation and dewatering) using standard protocols, in concurrence with all applicable regulations and permits, and these Specifications.
11. The work shall be completed during the typical low stream flow work window from July 15 to September 30 when salmon are least likely to be in the project area
12. Fish rescue: Fish shall be rescued from residual pools following any diversion of streamflow that will dewater the main channel. This work will be performed by the Maine Department of Marine Resources (MDMR). Advance notice of three (3) working days shall be given to MDMR prior to any diversion or work isolation activity. Fish must be collected via seining, nets or hand capture and removed to the main channel downstream. Fish relocation shall be performed as necessary in isolated areas.
13. If ESA-listed species are observed behind the turbidity curtains or within areas excluded via cofferdam at any point during construction, activities will cease, and the Contractor shall contact MDMR (207-350-9791) who will coordinate the needed response.
14. Active flows shall be diverted around the active work area during construction. This diversion channel shall remain passable for fish throughout the duration of the work.
15. Provide drainage for the site grading at all times. Divert surface runoff from excavations and trenches.
16. Contractor shall maintain standby diversion and dewatering equipment on the job site.
17. Discharge of a temporary bypass system, if necessary, must be accomplished in a way that does not cause erosion or turbidity downstream of the project site.
18. Control of surface runoff shall include operations adequate to bypass, divert, or remove all flowing water.
	1. Utilize methods necessary to effectively prevent erosion and control of sedimentation and include the following:
		1. Retardation: Mechanically retard rate of runoff by construction of diversion ditches, terraces, and berms. Divert runoff to protect drainage courses.
		2. Protect side and backslopes as soon as rough grading is complete by accelerated growth of permanent vegetation, temporary vegetation, mulching or netting.
		3. Remove temporary protection prior to final grading operations.
19. Coffer dams and turbidity curtains will be used throughout project work to minimize sediment disturbance, transport, and exposure of dry sediment to stream flow. Before each cofferdam is dismantled, the contractor shall remove the pumps and extract any remaining construction debris from within the cofferdam. Any disturbed areas shall be stabilized, and all permanent erosion control BMPs shall be installed. The close-out procedure described above may cause temporary effects to water quality in the action area, but any generated turbidity will subside in a short timeframe.
	1. EROSION AND POLLUTION CONTROL
		* + 1. Erosion Control measures shall be in place prior to any ground disturbing activity on the site and shall be inspected regularly by the contractor for effectiveness during the course of construction.
				2. The Contractor shall perform erosion control for the duration of the Contract. The Contractor may use the measures specified and shown in the Drawings, or alternative measures of his own design to ensure satisfactory performance and that the erosion control requirements of all applicable permits are met.
				3. Wattles shall be placed to control rill erosion.
				4. Fully biodegradable erosion control blanket shall be secured on slopes steeper than 3:1, not including streambanks which are covered under other provisions.
				5. Control of Dust:
20. No construction activity shall take place without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne so that it remains visible beyond the limits of construction. Reasonable measures may include paving, frequent road cleaning, planting vegetative groundcover and the application of water.
21. Utilize methods and practices of construction to eliminate dust in full observance of agency regulations.
22. The RPR will determine the effectives of the dust control program and may request the Contractor to provide additional measures, at no additional cost to the Owner.
	* + - 1. Silt Fence shall be installed as shown in the Drawings. Silt Fence shall be installed prior to clearing and grubbing to control sediment from leaving the project limits. The Contractor may submit alternate methods of establishing perimeter sediment control in locations where silt fence installation is deemed impractical or problematic. The Contractor shall not make this substitution without prior approval of the Engineer.
				2. Solid Waste Disposal:

Collect solid waste on a daily basis.

Provide disposal of solid waste to an approved solid waste disposal site.

* + - * 1. Control of Chemical Waste:

Store and dispose of chemical wastes in a manner approved by regulatory agencies.

Take special measures to prevent chemicals, fuels, oils, greases, herbicides, and insecticides from entering drainage ways.

Do not allow water used in onsite material processing, concrete curing, cleanup, and other waste waters to enter drainage way(s) or stream(s).

* + - * 1. Burning:

Do not burn material on site. If the Contractor elects to dispose of waste material by burning, make arrangements for an off-site burning area and conform to all agency regulations.

* + - * 1. Control of Noise:

Control noise by fitting equipment with appropriate mufflers.

* + - 1. MAINTENANCE
				1. Erosion control features shall be maintained by the Contractor throughout the life of the project.
			2. REMOVAL OF FACILITIES AND SUPPLIES
1. Following the conclusion of project construction and upon approval of the Owner, the flow management and erosion control facilities and materials shall be removed, and the areas impacted by these operations shall be restored to their original condition. Materials used in diversion and erosion control activity shall become property of the Contractor and removed from the site at his sole expense.
2. Completion of Work:
	1. Upon completion of work, leave area in a clean, natural looking condition.
	2. Ensure all signs of temporary construction and activities incidental to construction of required permanent work are removed upon completion of work.
	3. Grade, fill and seal all disturbed area. Disturbed areas, as shown in the Drawings, shall be seeded and mulched according to the planting plan as soon as practical after completion of grading operations, but within the period specified for germination of seed.

END OF SECTION 31 25 00