

SECTION 02370 - EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Bidding requirements, conditions of the contract and pertinent portions of sections in Division 1 of these specifications and MaineDOT Standard of Specifications (current version – as revised), Items 610 – Stone Fill, Riprap, Stone Blanket, and Stone Ditch Protection , 656 – Temporary Soil Erosion and Water Pollution Control, apply to the section as fully as though repeated herein.
- B. Section Includes:
 - 1. Temporary and permanent erosion control systems.
 - 2. Slope Protection Systems.
- C. Related Sections:
 - 1. Excavation and Fill: Section 02315

1.02 UNIT PRICE - MEASUREMENT AND PAYMENT

1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T88 - Standard Specification for Particle Size Analysis of Soils.
 - 2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.
- B. ASTM International:
 - 1. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
 - 2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³).
 - 3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).
 - 4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- C. MaineDOT Standard Specifications
 - 1. 656 - TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL
 - 2. 717 - ROADSIDE IMPROVEMENT MATERIALS
- D. MAINE EROSION AND SEDIMENT CONTROL BMPS (MeBMP), Bureau of Land and Water Quality Maine Department of Environmental Protection, MARCH 2003

PART 2 - PRODUCTS

2.01 MATERIAL REQUIREMENTS

- A. Furnish materials in accordance with MeBMP, MaineDOT and City of Portland standards.
- B. The Contractor must use temporary erosion control materials as shown on the Drawings, MeBMP, MaineDOT List of Erosion Control Materials (if such a list is established), and/or the MaineDOT's latest BMP Manual.
- C. Silt Fence
 - 1. This sediment barrier utilizes synthetic filter fabrics. It is designed for situations in which only sheet or overland flows are expected. Generally pre-manufactured synthetic silt fencing with posts attached is used. See the detail drawing located in the Drawings for the proper installation. The filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier. The filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 degrees F to 120 degrees F. Posts for silt fences shall be either 4-inch diameter wood or 1.33 pounds per linear foot steel with a minimum length of 5 feet. Steel posts shall have projections for fastening wire to them. The height of a silt fence should not exceed 36 inches as higher fences may impound volumes of water sufficient to cause failure of the structure. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced together only at support post, with a minimum 6-inch overlap, and securely sealed. Post spacing shall not exceed 6 feet.
- D. Mulch Berm
 - 1. Erosion control mix can be manufactured on or off the project site. It must consist primarily of organic material, separated at the point of generation, and may include: shredded bark, stump grindings, composted bark, or acceptable manufactured products. Wood and bark chips, ground construction debris or reprocessed wood products will not be acceptable as the organic component of the mix.
 - 2. Composition: Erosion control mix shall contain a well-graded mixture of particle sizes and may contain rocks less than 4" in diameter. Erosion control mix must be free of refuse, physical contaminants, and material toxic to plant growth. The mix composition shall meet the following standards:
 - a. The organic matter content shall be between 80 and 100%, dry weight basis.
 - b. Particle size by weight shall be 100 % passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen.
 - c. The organic portion needs to be fibrous and elongated.
 - d. Large portions of silts, clays or fine sands are not acceptable in the mix.
 - e. Soluble salts content shall be < 4.0 mmhos/cm.
 - f. The pH should fall between 5.0 and 8.0.
- E. Gravel Construction Exit
 - 1. Refer to the Drawings for the proper installation of construction exit. It should include:
 - a. Aggregate Size: Use 2-3 inch stone, or reclaimed or recycled concrete equivalent

- b. Aggregate thickness: Not less than six (6) inches.
- c. Width: 10-foot minimum, but not less than the full width of points where ingress or egress occurs.
- d. Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).
- e. Geotextile: To be placed over the entire area to be covered with aggregate. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.
- f. Criteria for Geotextile: The filter cloth shall be woven or non-woven fabric. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown

F. Hay Bale Drop Inlet Structure

- 1. Refer to the Drawings for the proper installation of hay bale sediment barrier.
 - a. Bales shall be string-tied with the bindings oriented around the sides rather than over and under the bales.
 - b. Bales shall be placed lengthwise in a single row surrounding the inlet, with the ends of adjacent bales pressed together.
 - c. The filter barrier shall be entrenched and backfilled. A trench shall be excavated around the inlet the width of a bale to a minimum depth of 4 inches. After the bales are staked, the excavated soil shall be backfilled and compacted against the filter barrier.
 - d. Each bale shall be securely anchored and held in place by at least two stakes or rebar driven through the bale.
 - e. Loose straw shall be wedged between bales to prevent water from entering between bales.

PART 3 - EXECUTION

3.01 WATER POLLUTION CONTROL REQUIREMENTS

- A. The Contractor must comply with the applicable federal, state, and local laws, and regulations relating to prevention and abatement of water pollution.
- B. Except as allowed by an approved permit and authorized in writing, pollutants and construction debris including excavated material, aggregate, residue from cleaning, sandblasting, or painting, cement mixtures, chemicals, fuels, lubricants, bitumens, raw sewage, wood chips, and other debris shall not be discharged into waterbodies, wetlands, or natural or man-made channels leading thereto and such materials shall not be located alongside waterbodies, wetlands, or such channels such that it will be washed away by high water or runoff.
- C. Construction operations in waterbodies or wetlands shall be restricted to the construction limits shown on the plans and to those areas that must be entered for the construction of temporary or permanent structures, except as allowed by approved permit or otherwise authorized by the Engineer or Owner's Representative in writing.
- D. Mechanized equipment shall not be operated in waterbodies or wetlands, except as allowed by approved permit and authorized in writing.

- E. Upon completion of the work, waterbodies or wetlands shall be promptly cleared of all falsework, piling, debris or other obstructions caused by the construction operations.

3.02 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 8 feet. Slope stockpile sides at 2:1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
 - 1. During non-germinating periods, apply mulch at recommended rates.
 - 2. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with permanent seeding specifications.
- E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.03 MAINTENANCE

- A. The structure shall be inspected before and after each rain event and repaired as needed.
- B. Sediment shall be removed and the stormdrain sediment barrier restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
- C. Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.
- D. All catchbasins and stormdrain inlet must be cleaned at the end of construction and after the site has been fully stabilized.

3.04 PROTECTION

- A. Section 01700 - Execution Requirements: Requirements for protecting finished Work.
- B. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.
- C. Protect paving from elements, flowing water, or other disturbance until curing is completed.

END OF SECTION 02370