SECTION 02270

EROSION AND SEDIMENT CONTROL

PART ONE - GENERAL

1.1 DESCRIPTION

A. Work included: Provide all material, equipment and labor necessary to install erosion and sediment control elements as shown on Drawings and in accordance with this Specification. Prior to commencing work, CONTRACTOR shall obtain an erosion and sediment control permit for the project from the local controlling jurisdiction (if required). All costs for permit application shall be borne by the CONTRACTOR. Any permits required by the CONTRACTOR shall be available at the site at all times.

B. Related work specified elsewhere:

1. Clearing and Grubbing - Section 02110
2. Water Distribution Lines - Section 02665
3. Sanitary Sewer Collector Lines and Force Main - Section 02731
4. Seeding and Restoration - Section 02900

C. All erosion control measures must be in accordance with State Minimum Criteria, as described in latest edition of the Virginia Erosion and Sediment Control Handbook.

D. Measurement and Payment: No separate item is provided for erosion and sedimentation controls, therefore the CONTRACTOR must include the cost for such items in the unit prices to which the erosion controls pertain, or the cost must be included in the lump sum price of the Contract, wherever applicable.

PART TWO - PRODUCTS

2.1 STRAW BALES

All straw bales shall be securely tied. Moldy, musty or decayed bales are unacceptable.

2.2 SILT FENCING

A. Burlap: Burlap shall be 10 oz. per $yd.^2$ fabric.

B. Posts: Posts for silt fences shall be either 1" x 2" wooden stakes or equivalent metal stakes with a minimum length of 3 feet. Steel posts shall have projections for fastening wire to them.

C. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or

ethylene yarn and shall be certified by manufacturer or supplier as conforming to the following requirements:

PHYSICAL PROPERTY	TEST	REQUIREMENTS
Grab tensile	ASTM-D-4632	175 lbs. (min. warp)
Grab elongation	ASTM-D-4632	25% (max.)
Mullen burst	ASTM-3786	300 psi.(min.)
Trapezoidal tear	ASTM-D-4533	50 lbs. (min.)
Puncture	ASTM-3787(mod.)	80 lbs. (min.)
U.V. resistance	ASTM-4355	70% (min.)
Equivalent opening size	U.S. sieve #	30/50
Filtering efficiency	VTM-51	75% (minimum)

Synthetic 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° F to 120° F. Silt fence shall be Amoco 1380 Silt Stop, Exxon GTF100S-105S silt fence, Mirafi Envirofence, or approved equal.

D. Other materials: Select all other materials not specifically described but required for compliance with the erosion and sediment control plan, subject to approval by the ENGINEER.

PART THREE - EXECUTION

3.1 GENERAL

A. CONTRACTOR shall familiarize himself with all the stipulations and requirements of the erosion and sediment control permit. CONTRACTOR shall be held responsible for strict adherence to these regulations and shall work closely with the administrating authority when under their jurisdiction. CONTRACTOR shall be deemed liable for any negligence or infringement, which results in non-compliance with this permit.

B. The location of all sediment and erosion control measures shall be left to the CONTRACTOR'S discretion unless otherwise shown on the Drawings or required by the permit. Should there be no requirement of an erosion control plan, then CONTRACTOR shall be required to provide such measures necessary to prevent the formation of gullies or the spread of mud and debris across roads, into waterways or other areas where it may be considered a nuisance.

3.2 PLANNING OF CONSTRUCTION

A. Planning and coordination of the construction is needed to minimize sediment pollution. Clearing shall be kept to shortest distance possible ahead of construction. Cleared areas shall be kept to minimum required to facilitate construction.

B. Restoration work shall be performed as the Project progresses. and not be left until the end of the Project. No areas shall be left unprotected for longer than 10 days without some form of temporary seeding or, if during a non-growing season, some other form of stabilization, such as mulch.

3.3 EXCAVATION AND BACKFILL

Excavation shall be closely controlled. The material removed from the excavation shall be selectively stockpiled in areas where a minimum of sediment will be generated and where other damage will not result from piled earth. Drainageways shall be protected at all times and the piling of soil in drainageways shall not be allowed. Backfilling operations shall be performed in such a manner such that remaining trees are not damaged. Temporary repaving shall be placed promptly following completion of backfilling and compaction in improved areas.

3.4 STOCKPILES

A. Stockpile areas shall be selected and maintained by on-site personnel. Site selection and stockpile design shall incorporate sediment and erosion control considerations to prevent the potential direct production and delivery of sediment to waterways, damage to vegetation, and the destruction of trees selected for preservation. Temporary stabilization of stockpiles shall be promptly instituted. The existence of critical slopes on stockpiles shall be avoided. Stockpiling in or immediately adjacent to diversion channels shall not be allowed. If a stockpile is to remain for over sixty (60) days, it shall be stabilized by soil stabilizing chemicals, temporary vegetation, interim structures or other approved practices.

B. Temporary vegetative measures planned for implementation on stockpiles shall be established immediately after stockpile completion. Proper mulching and soil stabilization in conjunction with these seeding operations shall also be carried out.

3.5 STREAM PROTECTION

A. Where construction is close to existing streams and other waterways, construction shall be performed in a manner which will not contribute to stream pollution. Construction practices shall include the following:

1. Construction debris, excavated materials, brush, rocks, refuse and topsoil shall be kept as distant as possible from nearby waterways.

2. Stream crossings and machinery operation in the stream shall occur only as required for construction of the project, and shall be kept to a minimum. Under no circumstances shall a stream bed be permitted to become a highway for machinery traffic.

3.6 PUMP WATER

Pump water management shall be practiced by CONTRACTOR to minimize production and transport of sediment. Pumped water shall be discharged onto stabilized surfaces and then allowed to be filtered by existing vegetation or other temporary measures as appropriate. Since ditches may be required to transport pumped water away from construction areas, they shall be given the same consideration as other waterways and shall be stabilized in a manner satisfactory to the ENGINEER/OWNER.

3.7 TEMPORARY STRAW BALE BARRIERS

A. Place bales in a single row, lengthwise, on the contour and embedded 3" into the soil. In lieu of embedment, a 3" high shoulder of suitable soil may be compacted against the base of the straw bales.

B. Securely anchor straw bales in place by means of wooden stake or steel rebar driven through the bales.

3.8 SILT FENCES

Place silt fences in a continuous row, parallel to the slope, waterway, roadway or other area being protected. Anchor the silt fence fabric to posts set at a minimum of 10 ft. apart. Embed the bottom of the fabric a minimum of 4" deep and backfill and compact soil over the embedded portion. Replace or repair any sections of fence, which collapse or are washed out during the construction period as soon as reasonably possible.

3.9 CLEAN UP

A. Upon project completion, remove all temporary erosion and sediment control devices. Remove from job site all excess materials, debris, surplus tools and equipment. Leave site in a neat and orderly condition acceptable to the ENGINEER/OWNER.

B. Upon removal of temporary erosion and sediment control devices, perform all required finish grading, seeding, and mulching as specified under Section 02900.

END OF SECTION