

## SECTION 312100 - EROSION CONTROL

### PART 1 - GENERAL

1.1 Soil erosion and sedimentation control shall be provided by Contractor through phasing of project and construction of control devices such that siltation onto adjacent properties does not occur. The control measures shall begin prior to land disturbing activity, shall continue during construction with necessary maintenance until the disturbed land is stabilized. All areas of the site which are disturbed shall be protected. Temporary erosion control measures shall be removed at the conclusion of the project.

A. Construction sequence shall generally be as follows:

1. Install erosion control measures.
2. Demolish indicated site features and relocate underground utilities.
3. Rough grade site and install storm drainage system.
4. Stabilize banks and lawn areas with seed.
5. Construct building and site improvements.
6. Fine grade site and landscape.
7. Remove temporary protective measures and accumulated sediment.

B. Contractor shall provide ground cover within 30 calendar days after completion of construction within areas not otherwise used for storage of materials or construction of project.

### 1.2 EROSION CONTROL MEASURES

A. Control measures shall be provided as indicated on drawings and specified herein. Contractor shall maintain and/or replace erosion control measures throughout duration of project as may be required due to accumulation of sediment or deterioration of control devices.

B. Other methods of protecting structures and facilities may be used at the option of the Contractor and subject to the approval of the A-E.

C. Additional measures may become necessary upon field inspection by the N.C. Department of Resources and Community Development Land Quality Section or other authorities having jurisdiction over the project.

D. The Contractor shall acquire and maintain at the job site throughout the construction period a copy of Erosion and Sedimentation Control Planning and Design Manual published by the NC Sedimentation Control Commission and the Department of Environment, Health and Natural Resources. Contractor shall be familiar with the Sedimentation Pollution Control Act and shall avoid violations of the act. Actions by the Contractor resulting in a Notice of Violation of the Act will result in payment to the Contractor being withheld equal to the amount of potential fines and penalties.

E. Any changes required to accommodate subsequent conditions that may develop or become evident will be compensated for by a duly processed change order.

- F. Protection of existing structures and facilities from sedimentation shall be the responsibility of the Contractor. Items to be protected shall include catch basins, natural waterways, drainage ditches, sidewalks, drives, roads and lawns. Contractor shall not block storm drains and shall provide adequate drainage in the event that heavy rains occur. Large quantities of water shall not be impounded by temporary erosion control measures.
- G. Stone berms may be used as a temporary measure to filter sedimentation entering catch basins, drainage ditches, walks, etc. Stone shall be removed after the site is stabilized and all trapped sediment redistributed on the site in a manner such that the sediment will not erode into the surrounding drainageways. Grates of catch basins shall be kept free of debris and stone at all times.
- H. Riprap shall be field stone or rough unhewn quarry stone. Stone shall be sound, dense and resistant to the action of air and water and shall vary in weight from 5 to 200 pounds. 30% of the total weight of riprap shall be in individual pieces weighing a minimum of 60 pounds. Install where indicated on drawings.
- I. All construction traffic shall be routed to access points which shall be graveled to prevent tracking of mud onto adjacent paved surfaces.
  - 1. The access points shall be maintained in a condition which will prevent tracking or flowing of sediment onto public streets or existing pavement. This may require periodic top dressing with additional stone as conditions demand. All sediment spilled, dropped, washed or tracked onto public streets must be removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entering a public street. When washing is required, it shall be done on an area stabilized with crushed stone which drains into an approved sediment basin.
- J. Excavation and backfill material shall be placed on the uphill side of the excavations during earthwork operations whenever possible, and shall be protected from eroding into adjacent properties and/or waterways.
- K. Silt check fences shall be as indicated on the drawings.
- L. Sediment traps and silt basins shall be as indicated on the drawings.
- M. Diversion ditches shall be as indicated on the drawings.
- N. Jute matting shall be installed on all slopes greater than 2-1/2 to 1, along ditches subject to erosion.
- O. Grass shall be provided on all disturbed areas not otherwise occupied by buildings, roads or other structures.
- P. Mulching may be either a small grain straw or tame hay, and shall be free of obnoxious weed seeds or other undesirable matter. The material shall be spread over areas at a rate of 120 bales per acre. Mulch shall be spread within 30 days following the disturbance of the original grades. In the event the soil is not suitable for seeding, mulch shall be spread over the site until grassing operations are favorable.
- Q. The use of hay bales for erosion and sediment control shall not be acceptable.

### 1.3 JUTE MATTING

- A. Jute matting shall be a uniform open plain weave of single jute yarn of loosely twisted construction. Yarn thickness shall not vary by more than one half its normal diameter. The width shall be approximately 48" with 78 warp ends per width of cloth and 41 weft ends per yard of cloth. Weight of cloth shall average 1.22 pounds per linear yard. Staples shall be 6" minimum length, 11 gauge steel wire, "U" shaped.
- B. Install matting down grade and run each strip parallel to the previous strip with a 4" overlap. Bury the top end of the jute strip in a trench 4" deep. Staple the matting at 2' to 3' on center and 12" to 18" on center at edges and at overlaps.

### 1.4 NYLON EROSION CONTROL MAT

#### A. Description

- 1. This work shall consist of furnishing and installing a nylon erosion control mat for concentrated water flow areas (ditches and swales) and non-concentrated water flow areas (slope surfaces) in accordance with the provisions of this specification and within reasonably close conformity with the lines, dimensions, and grades shown on the plans.

#### B. Materials

- 1. Nylon Erosion Control Mat: The nylon erosion control mat shall consist of nylon 6 with a minimum content of 0.5% by weight carbon black and shall consist of a bulky structure of entangled nylon monofilaments fused at their intersections, forming a stable mat of suitable weight and configuration. The mat shall be resilient, permeable, and highly resistant to environmental deterioration and ultraviolet degradation. In addition the mat shall comply with the following minimal physical properties:

<u>Properties</u>	<u>Type A</u>	<u>Type B</u>
Filament diameter	0.0157 in.	0.0138 in.
Weight	0.077 psf	0.05 psf
Mat thickness	0.7 in.	0.35 in.
Mat width	36 in.	36 in.
Roll length	318 ft.	482 ft.
*Tensile strength		
Length	7.84 lb/in.	4.48 lb/in.
Width	4.48 lb/in.	2.24 lb/in.
Elongation	50%	50%
**Resiliency	80%	80%

- a. \*ASTM 1682 strip test procedure modified to obtain filament bond strength.
- b. \*\*Percent recovery after 30 minutes at compressive load cycling of 100 psi for three cycles.

C. Ground Fasteners

1. Wooden Stakes: Wooden stakes shall be sound, rough sawed hardwood, measuring 1" x 3" sawed to a point in a triangular shape and shall be 12" long for dense, well compacted soils, and 18" long for loose or soft soils. Stakes are to be driven to within 2" to 3" of being flush with ground.

D. Site Preparation

1. All surfaces to be protected with nylon erosion control mat shall be graded, shaped, and finished so that the surfaces are stable, firm, and free of rocks or obstructions which would prevent the mat from lying in direct contact with the soil surface.
2. Seeding, fertilizing, and liming shall be in accordance with Section 329200 "Turf and Grasses". Areas may be planted before or after mat installation; however, seeding prior to mat installation will require trenches and slots to be seeded after backfilling.

E. Construction

1. Installation of Mat in Concentrated Water Flow Areas (Ditches and Swales): A transverse trench, 6" wide by 12" deep, is to be cut at the entry and terminal ends of the concentrated water flow area to be protected. In addition, there shall be transverse check slots, 6" wide by 12" deep, installed at 25' intervals. The mat shall be secured in the trenches and slots with ground fasteners at intervals of 3' or less, prior to backfilling and compacting of soil in the trenches and slots. Adjoining mats in the longitudinal direction shall be overlapped with a minimum of 3" and fasteners provided at 3' intervals. The ends of mats shall be overlapped 36" with the upslope mat on top. The outer edges of the mat shall be buried in a longitudinal 6" wide slot and fastened at 3' intervals and then backfilled to prevent water from undercutting the edges.
2. Installation of Mat on Non-Concentrated Water Flow Areas (Slope Surfaces): Installation of mat on non-concentrated water flow areas shall be the same as for concentrated water flow areas except as follows: No transverse check slots or longitudinal slots are required. All longitudinal fasteners shall be placed at 5' intervals. The ends of mats are to be overlapped 18" with the upslope mat on top.

1.5 GRASSING

- A. See SECTION 312110 for grassing specifications.

**END OF SECTION 312100**