

## SECTION 312513 - EROSION AND SEDIMENTATION CONTROL

### PART 1: GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

#### 1.2 SCOPE:

- A. Related Work Specified Elsewhere:
  - 1. See Civil Engineering drawings.
- B. Work Included This Section:
  - 1. Protection of the project area and surroundings from soil erosion, runoff, dust, sedimentation or the effects of harmful waste discharges resulting from construction operations.
  - 2. The Contractor shall have full responsibility for the construction and maintenance of erosion control and sedimentation control facilities as shown on the Drawings and as specified herein.
  - 3. Installation and maintenance of erosion control devices and structures and temporary seeding of disturbed areas. See Sections 329200 and 329300 for permanent seeding.
  - 4. Extent of erosion control work is shown in general on the Drawings. However, it is the responsibility of the Contractor to provide all erosion control construction required in order to comply with local and state regulations, even if not specifically shown on the Drawings or specified herein.
  - 4. The Contractor shall provide permanent or temporary ground cover as soon as possible, within 30 working days after disturbing any areas of the site and not over 10 working days after completion of the rough grading of any specific area.

#### 1.3 QUALITY ASSURANCE:

- A. General: Employ only experienced personnel familiar with required work. Provide adequate supervision by qualified foreman.
- B. Codes and Standards: Comply with applicable North Carolina Administrative Code, Title 15, Chapter 4, "Sedimentation Control" (15 NCAC4), and the North Carolina Erosion and Sediments Control Planning and Design Manual, latest edition.

### PART 2: PRODUCTS

#### 2.1 MATERIAL:

- A. Materials shall be in accordance with the North Carolina Erosion and Sediment Control Planning and Design Manual, Latest Edition, and subsequent revisions, and NCDOT Standards, where indicated.
- B. Temporary Silt Fence: Provide as per NCDENR 6.621 or equivalent materials.
  - 1. Posts: Provide steel (1 3/4" wide, self- or fastener-angle type, 5' long) posts.
  - 2. Fence Fabric: Galvanized steel wire; 32 inch overall height with at least 6 horizontal line wires; vertical stay wires spaced 12 inches apart; top and bottom wires 10 gauge, all other wire 12 1/2 gauge.

3. Filter Fabric: 36 inch wide fabric; burlap, 6.7 oz./sq. yd., or Dominion Textile Corporation "Mirafi 100X" Trevira type 1127, Amoco type 2122 or equivalent.
- C. Erosion Control Blankets: Provide either AMXCO Curlex Blankets or AMXCO Hi-Velocity Curlex Blankets by American Excelsior Company, Arlington, Tx, Excelsior Blankets by Contech ,type S150 North American Green or approved equal, as necessary to control erosion, depending upon steepness of the slope and velocity of storm water down the slope.
1. AMXCO Curlex Blanket is a machine produced mat of curled wood excelsior of 80% six-inch or longer fiber length and of consistent thickness with the fiber mat evenly distributed over the entire area of the blanket. The top surface of the blanket is covered with a photodegradable extruded plastic mesh.
  2. AMXCO Hi-Velocity Curlex Blanket is the same as the AMXCO Curlex Blanket except is thicker and both sides are covered with extra heavy duty extruded plastic mesh.
  3. Wire staples for AMXCO Curlex Blanket are to be .091" minimum in diameter, U-shaped with 6" legs and 1" minimum crown.
  4. Wire staples for AMXCO Hi-Velocity Curlex Blanket are to be .091" minimum in diameter, U-shaped with 8" legs and 1" to 2" crown.
- D. Seeds for Temporary Ground Cover: Labeled to show they are within the requirements of the N.C. Department of Agriculture as to purity, germination, and the restriction of prohibited weed seeds. Use seed certified to have a minimum purity of 95% and to have passed a germination test of 90% with total weed seed in mixture not exceeding 1%.
1. Temporary Seeding Schedule:
 

<u>Plants &amp; Mixtures</u>	<u>Planting Rates/Acre</u>	<u>Planting Dates</u>
Sudan Grass or	50 lb/acre	April 16 – August 20
German Millet	40 lb/acre	April 16 – August 20
Rye Grain	120 lb/acre	October 1 – February 28
  2. Permanent Seeding: Conform to Section 329200 Turf and Grasses.
- E. Mulch: Small Grain straw or tame hay to be applied at 75 to 100 lbs/1000 sq. ft. or 1 ½ tons/acre, free from seed or obnoxious weeds.
- F. Emulsified Asphalt: Suitable for application using liquid applicator on power mulch blower or other suitable equipment at the rate of 200 qa./ton of straw.
- G. Stone: Provide (ABC) or Base course as specified by NCSSRS.
- H. Plain Rip Rap: NCDOT Article 942-1, Class 1 (5 - 200 lb. d 50=8"). More than 50% of the mixture shall be larger than the d50 stone size indicated.
- I. Lime:
1. Ground Dolomitic limestone not less than 85% total carbonates and magnesium, ground so that 50% passes 100 mesh sieve and 90% 20 mesh sieve. Coarser material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing No. 100 mesh sieve
  2. Conforming to applicable State fertilizer laws; with availability of plant nutrients conforming to standards of the A.O.A.C. uniform in composition, dry, free flowing.
  3. Apply 2000 pounds per acre of ground agricultural limestone.
- J. Commercial Fertilizer:
1. A complete plant food containing nitrogen, phosphoric acid and potash in percentages as recommended by the State Department of Agriculture based on analysis of topsoil and soil required herein.

2. Conforming to applicable State fertilizer laws; with availability of plant nutrients conforming to standards of the A.O.A.C. uniform in composition, dry, free flowing.
  3. Apply 750 pounds per acre of fertilizer.
- K. Superphosphate:
1. Granular, dry, free flowing normal superphosphate (18-20% P.O.); deliver in original bags.
- L. Wire Staples:
1. 16 gauge steel wire, with minimum of 3" top and 4" long legs.
- M. Flex Terra :
1. Flexible growth medium composed of long strand, thermally processed wood fibers, crimped, interlocking fibers and additives manufactured by PROFILE ProductsLLC.
  2. Pre- packaged by manufacturer. Composition shall be (76%) thermally processes wood fibers, (10%) cross linked hydro-colloid tackifiers and activators, (5%) Crimped, Interlocking Fibers, (10% ) Moisture Content

### PART 3: EXECUTION

#### 3.1 GENERAL:

- A. The construction sequence and scheduling of construction operations shall be an integral part of the erosion control plan. Establish a sequence of operations that will facilitate the control of erosion:
- B. Limit initiation of work to the minimum area necessary to prosecute work, leaving soil cover on other areas undisturbed.
- C. Complete work on individual areas as quickly as possible to permit installation of planned temporary and permanent erosion control measures.
- D. Whenever land-disturbing activity is undertaken, plant a ground cover sufficient to restrain erosion or otherwise protect that portion of the site upon which further active construction is not being undertaken within 15 days.
- E. The following measures are listed as a guide for the protection of existing structures and facilities, and shall be included in the Contractor's expense where applicable. Design and construction of the measures shall be in accordance with all applicable laws, codes, ordinances, rules and regulations.
- F. Silt Traps: (6.60) Silt traps, diversions and other earthwork shall be constructed in accordance with sections of the specification under Earthwork.
- G. Silt Fences: (6.62) Set posts not more than 10 feet apart. Attach fabric to posts with bottom at or just below grade.
  1. Attach filter fabric to fence and leave 6 inch skirt at bottom. Cover filter fabric skirt with compacted backfill to prevent water from washing under fence.
  2. Install silt fence along downhill side(s) of site.
- H. Erosion Control Blankets: Placement of the blankets and anchoring down with wire staples shall be in accordance with published recommendations of the erosion control blanket manufacturer.

- I. Temporary Gravel Construction Entrance: (6.06) Place stone entrance at all entrances/exits to construction site used by vehicular traffic.
- J. Diversion Ditches: Install diversion ditches as indicated on drawings and in accordance with Erosion Control Manual.
- K. Drop Inlet Protection: (6.50) Provide gravel inlet protection around storm drain inlets.
- L. Existing Structures and Facilities:
  - 1. Existing structures, facilities, and water courses shall be protected from sedimentation.
  - 2. The Contractor shall be responsible for the construction of necessary measures, and all costs shall be at the expense of the Contractor.
  - 3. Items to be protected from sedimentation deposits shall include, but are not limited to, all down stream property, natural waterways, streams, lakes and ponds, catch basins, drainage ditches, road gutters, and natural buffer zones.
  - 4. Control measures such as the erection of silt fences, barriers, dams, or other structures shall begin prior to any land disturbing activity. Additional measures shall be constructed as required during the construction.
- M. Dust Control: (6.84) Provide dust control on disturbed areas to prevent visible soil particles from being air born and carried off site.
- N. Flexterra:
  - 1. Flexterra shall be applied at the rate of 3500 pounds per acre at a thickness of 0.2 inches or that recommended by the manufacturer for the appropriate slope.
  - 2. Strictly comply with manufacturer's installation instructions and recommendations. For optimum pumping and application performance use approved mechanically agitated, hydraulic seeding/mulching machines with a fan-type nozzle (50-degree tip). Apply FGM from opposing directions to achieve best soil coverage.

### 3.2 SITE GRADING OPERATION:

- A. Do not commence construction work until immediate and temporary soil erosion measures are installed. These temporary measures are to be installed as detailed on the approved Erosion and Sedimentation Control Plan.
- B. Temporary Ground Cover: Areas which will stand for over 30 days at temporary grade elevations shall be seeded with a temporary grass seed cover applied within 7 days of completing the rough grading operations.
- C. Areas which become eroded or do not have 75% minimum coverage of healthy grass or reveal bare spots shall be reseeded, or remulched, or renetted and watered such that the entire planted controlled erosion area contains a healthy and temporary stand of grass during the construction period.
- D. During construction use water sprinkler trucks to apply water to disturbed soil to prevent wind blown soil erosion. Install temporary surface stabilization measures to disturbed areas when wind gust will exceed 25 miles per hour on site.
- E. Permanent Ground Cover: On all ground areas that are graded to final elevations, permanent ground cover shall be established within 7 days of completing the rough grading of that area. Any temporary ground covers that exist on interim ground surfaces shall be removed prior to continuing with finish grading to prevent an undesirable mix of grass types for final grass areas. Over-seeding will not be allowed since most temporary ground covers are very hardy types and will crowd out or overshadow the finer permanent ground covers.

- F. Stockpiled material shall be surrounded at the base with a temporary sediment barrier. Slopes of stockpiled material shall not exceed 2 to 1.
- G. Vehicles leaving the construction site shall be cleaned to remove mud prior to entrance onto public rights of way. Washing shall be done on a temporary construction entrance specified hereinafter.
- H. Cut and fill slopes shall be constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected. Concentrated runoff shall not flow down cut or fill slopes unless contained within and adequate temporary or permanent flume or slope drain structure.
- I. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment. Contractor shall clean up any inlets, pipes, ditches and culverts that have sediment from the project area.
- J. Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by [vehicular] tracking onto the paved surface. Where sediment is transported onto a public road surface, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner.

3.3 MAINTENANCE:

- A. Relocate, repair, clean out and perform any other operation necessary to maintain protective devices in effective operating condition at least once per month during construction period.
- B. Periodic inspections will be made on all projects by the local enforcement authority. An inspection shall be made during or immediately following initial installation of erosion and sediment controls, at least once in every two week period, within 48 hours following any runoff producing storm event, and at the completion of the project prior to the release of any performance bonds.
- C. In the event the Contractor repeatedly fails to satisfactorily control erosion and siltation, the Owner reserves the right to employ outside assistance or to use his own forces to provide the erosion control measures indicated and specified. The cost of such work, plus related engineering costs, will be deducted from monies due the Contractor for other work.

3.4 CLEANUP:

- A. Remove all temporary devices and cover within 30 days of site stabilization or after temporary measures are no longer needed.
- B. Dispose of trapped sediment material when temporary erosion control measures are removed.

END OF SECTION



## SECTION 31 31 16 - TERMITE CONTROL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Soil treatment with termiticide.
- B. Related Sections include the following:
  - 1. Division 06 Section "Rough Carpentry" for wood preservative treatment by pressure process.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Service Life of Soil Treatment: Soil treatment by use of a termiticide that is effective for not less than five years against infestation of subterranean termites.

#### 1.4 SUBMITTALS

- A. Product Data: For termiticide.
  - 1. Include the EPA-Registered Label for termiticide products.
- B. Product Certificates: For termite control products, signed by product manufacturer.
- C. Qualification Data: For Installer of termite control products.
- D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following:
  - 1. Date and time of application.
  - 2. Moisture content of soil before application.
  - 3. Brand name and manufacturer of termiticide.
  - 4. Quantity of undiluted termiticide used.
  - 5. Dilutions, methods, volumes, and rates of application used.
  - 6. Areas of application.
  - 7. Water source for application.
- E. Warranty: Special warranty specified in this Section.

#### 1.5 QUALITY ASSURANCE

- A. Comply with State of North Carolina, Department of Agriculture, Structural Pest Control Division, Chapter 34 of the North Carolina Administrative Code.
- B. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located.

- C. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label.
- D. Source Limitations: Obtain termite control products through one source.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.

#### 1.7 COORDINATION

- A. Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

#### 1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

- 1. Prepaid Warranty Period: Five years from date of Substantial Completion.

#### 1.9 MAINTENANCE SERVICE

- A. Provide Owner with option for continuing service agreement beyond warranty period.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: Unless otherwise superceded by an approved list of Termiticides from the authorities having jurisdiction, provide products by one of the following:
  - 1. Termiticides:
    - a. BASF; Termidor.
    - b. Bayer Corporation; Premise 75.
    - c. FMC Corporation, Agricultural Products Group;. Prevail, Dagnet, Talstar
    - d. Syngenta; Demon TC.
  - 2. Only those products listed as "sole source" and which have "pre-construction" use on the label shall be used for pre-construction termite prevention/control.

#### 2.2 SOIL TREATMENT

- A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.



## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control.
  - 1. Proceed with application only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparation before beginning application of termite control treatment. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.
- B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.
  - 1. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

### 3.3 APPLICATION, GENERAL

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

### 3.4 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute treatment evenly.
  - 1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
  - 2. Foundations: Adjacent soil including soil along the entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating the slab, and around interior column footers, piers, and chimney bases; also along the entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.
  - 3. Masonry: Treat voids.
  - 4. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 31 31 16