

SECTION 312500 – EROSION AND SEDIMENTATION CONTROL

Scope:

During construction, temporary and permanent protective structures and measures as detailed in the following paragraphs shall be implemented and maintained by the Contractor to minimize erosion and sedimentation as a result of the work being performed.

- A. The Contractor shall fully comply with the guidelines as specified in the Georgia Erosion and Sedimentation Control Act of 1975 (as amended).
- B. Land disturbance activity shall not commence until the Land Disturbance Permit has been obtained by the Owner, provided that a permit is required for the project.
- C. As the project will not cause a disturbance of greater than 1 acre, it will not require compliance with the Georgia Department of Natural Resources Environmental Protection Division (EPD) General Permit for Stormwater Discharge Associated with Construction of Infrastructure GAR1000002. However, if it becomes necessary to disturb more than 1 acre, the Contractor will assist Owner in preparing a Notice of Intent (NOI). Contractor will not start land disturbing activities until 3 days after the NOI has been filed with EPD.
- D. Use of erosion and sedimentation control measures shall be included in all permanent construction work and temporary construction work outside the rights-of-way where necessary as a result of construction operations, such as haul roads and equipment storage sites.
- E. The erosion and sedimentation controls shown on the Drawings and included in these Specifications are minimal requirements. The Contractor's methods of construction may require additional erosion and sedimentation controls not indicated on the Drawings or in these Specifications.
- F. The Contractor shall be solely responsible for control of erosion within the Project site and prevention of sedimentation in any adjacent waterways.

Submittals:

The Contractor will submit to the Owner within 30 days of award of project the fees associated with the NOI on the required EPD form for the amount of acreage to be disturbed, if applicable. Payment of fees associated with the NOI will also be made to Whitfield County as required under the General Permit, if applicable.

Quality Assurance:

The Owner will routinely inspect the erosion control measures installed by the Contractor and shall issue stop work orders if any of these measures are found incomplete or improperly installed. In addition to the Owner's inspections, the Contractor will perform inspections to ensure adequate erosion and sedimentation controls in accordance with the General Permit for Stormwater Discharges issued by EPD and requirements of any local agencies including Whitfield County Public Works.

Products and Implementation:

The Contractor will implement erosion and sedimentation controls in accordance with the Drawings and these Specifications and as required by the Owner. Products and methods not listed in these Specifications may be used by the Contractor if they meet the requirements of the Georgia Soil and Water Conservation Commission (GaSWCC) as outlined in the *Manual for Erosion and Sediment Control in Georgia* (as amended 2000) and are approved prior to use by the Owner.

- A. Silt Fence: Silt fence shall meet the minimum requirements of Section 171 – Temporary Silt Fence of the Department of Transportation, State of Georgia, Standard Specification, latest edition. Silt fence shall be constructed in areas as shown on the erosion control plan and as requested by the Owner, or his representative. The silt fence shall be maintained at all times.
- B. Hay Bales: Hay bales shall be placed as shown on the erosion control plan and as requested by the Owner, or his representative. They shall be maintained at all times.
- C. Disturbed Area Stabilization with Mulching Only (Ds1): The Contractor shall apply mulch and/or temporary seeding to all exposed areas within 14 days of disturbance. Mulching should be considered for short term stabilization if planting conditions for temporary grassing are poor.
- D. Disturbed Area Stabilization with Temporary Grassing (Ds2): The Contractor shall apply mulch and/or temporary seeding to all exposed areas within 14 days of disturbance. Temporary grassing can be applied to rough graded areas that will be exposed for less than six months. If an area will be exposed for longer than six months, then permanent disturbed area stabilization will be performed. If planting conditions are poor for temporary grassing, mulch can be applied for the area if it will be exposed for less than six months. Temporary erosion control shall consist of planting temporary grass of a quick growing species such as millet, rye grass, or cereal grasses suitable to the area. Seed, fertilizer, mulch and periodic watering shall be applied in adequate quantities to assure a full, healthy ground cover over the entire disturbed area of construction operations. All materials shall be of first class quality. All disturbed areas along the pipe line shall be grassed as soon as possible after backfilling operations have been completed.
- E. Disturbed Area Stabilization with Permanent Grassing (Ds3): Permanent grassing will be installed once all soil disturbing activities at the site have been completed. After completion of pipe laying operations, the Contractor shall grass disturbed areas immediately. All yards and ditches shall be returned to original condition or better within a timely fashion. The Contractor shall grass all areas that were disturbed by clearing or construction operations. Before seeding commences, the Contractor shall smooth the entire area with a drag and break up all clods. All deleterious material, large stones, roots, limbs, and other debris shall be removed to leave a smooth area suitable for mowing.
- (1) Agricultural lime meeting the specifications of the Georgia Department of Agriculture shall be spread at the rate of one to two tons per acre unless soil tests indicate lime is not required.
 - (2) Mulch is required for all permanent grassing installations and shall be applied to achieve 75% soil cover at a minimum. Dry straw or hay of good quality can be used for conventional seeding and shall be applied at a rate of 2 and ½ tons per acre. For hydraulic seeding, Contractor shall use wood cellulose mulch or wood pulp fiber at a rate of 500 pounds per acre followed by dry straw or hay at the above indicated rate. Mulch shall be applied within 24 hours of seeding and will be anchored.
 - (3) Grass seed shall be Tall Fescue or Bermuda planted in accordance with recommended planting dates in the GaSWCC (amended 2000). Other grass species shall be planted only when approved by Owner. Ryegrass will not be used in any permanent stabilization work.
 - (4) Fertilizer including total Nitrogen, available Phosphoric Acid and water-soluble Potash shall be applied as required in GaSWCC (amended 2000) depending on the grass species and time of the year. Grass seed shall be planted at the rates required

in the GaSWCC (amended 2000), 50 pounds per acre for fescue and 10 pounds per acre for Bermuda.

- (5) Grassing (by seeding) shall be completed as soon as practical after finish grading is completed in order to minimize erosion from rainfall and run-off. Any erosion occurring in grassed areas shall be immediately repaired.
- (6) Permanent seeding shall be done only if it can be completed between March 1 and November 1. Bermuda grass and Fescue grass mixed shall be planted between March 1 and May 1. Bermuda shall be planted between May 1 and July 31. Fescue shall be planted between August 1 and November 1. Temporary planting of rye grass shall be between November 1 and March 1. After March 1, in areas where rye grass was planted, Bermuda grass shall be planted.
- (7) Seed, fertilizer, mulch and periodic watering shall be applied in adequate quantities to assure a satisfactory ground cover over the entire area of construction operations. A satisfactory stand of grass is defined as a full cover, over the seeded area, of live and growing grass with no bare spots larger than two square feet.
- (8) Permanent grassing along highway right-of-way shall comply with Department of Transportation, State of Georgia, Standard Specifications Construction of Roads and Bridges, 1977 Edition, Section 700.
- (9) Permanent grassing through established pastures shall be by seeding with the same type of grass as was disturbed or, if acceptable to the property owner, seeding may be as recommended by the local Soil Conservation Agent or the GaSWCC (as amended 2000).
- (10) Grassing may be by hydroseeding or by the following described method.
 - a. Seed and fertilizer mix shall be as described above. All planting and seeding shall be watered thoroughly as soon as completed and shall be watered at least twice daily, or more often if necessary to provide continuous growth without setback until all growth from seed is thoroughly established.
 - b. Seeded areas shall be immediately mulched to aid in the establishment of vegetation. The mulching material will consist of dry straw or hay of good quality free of seeds of competing plants, and at the rate of 2 and ½ tons per acre.
 - c. Straw or hay mulch will be applied uniformly over the area, leaving about 25 percent of the ground surface exposed. It must be spread within 24 hours after seeding is done. The spreading must be done by blower-type or other mulch-spreading equipment or by hand and anchored by pressing the mulch into the soil. Anchoring must be done immediately after the mulch is spread. A disk harrow with the disk set straight or a special "packer disk" may be used. The disk may be smooth or aerated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disk should be dull enough not to cut the mulch but sharp enough to press it into the soil leaving much of it in an erect position.

F. Rip-Rap: The Contractor shall place rip-rap as required and directed by the Owner or Engineer.

- (1) Materials: Rip-rap shall be hard, durable rock, concrete rubble, or similar material weighing at least 150 lbs per cubic foot. Rip-rap shall consist of stone or bagged sand-cement to a thickness of approximately twelve inches (12"). Stone shall be hard

quarry or field stone of such quality that it will not disintegrate on exposure to water or weathering. Stone shall range in weight from a minimum of 25 pounds to a maximum of 150 pounds with at least 50 percent of the pieces weighing more than 60 pounds. Bagged sand-cement rip-rap shall consist of one part cement and five parts of sand in clean cloth bags, approximately one cubic foot in size. Sand and cement shall be as specified for concrete work herein. Rip-rap shall be reasonably well graded within the following limits established by the National Crushed Stone Association (NCSA):

Graded Rip-Rap Stone

NCSA No.	Size Inches (Square Openings)		
	Maximum	Average	Minimum
R-1	1-1/2	3/4	#8
R-2	3	1-1/2	1
R-3	6	3	2
R-4	12	6	3
R-5	18	9	5
R-6	24	12	7
R-7	30	15	12

- (2) Payment: Rip-rap will be paid for on the basis of the number of square yards measured in place to the thickness specified.
- G. Limit of Progress: The Engineer will limit the area of excavation commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other such pollution control measures current in accordance with an accepted schedule. Should seasonal limitations make such coordination unrealistic, special erosion control measures shall be taken immediately to the extent feasible and justified.
- H. Buffer Zones: The Contractor will maintain a minimum of a 25 foot buffer zone between the work and all creeks, streams, and rivers. A 100 foot buffer zone shall be maintained between the work and any creek, stream or river designated by EPD as a Trout stream. Owner may require more stringent buffer zones if it is necessary to provide protection to a particular water course.
- I. Construction in Rivers, Streams and Impoundments: Unless otherwise approved in writing by the Owner, construction operations in rivers, streams and impoundments shall be restricted to those areas which must be entered for the construction of temporary or permanent structures. As soon as conditions permit, rivers, streams and impoundments shall be promptly cleared of all falsework, piling which are to be removed, debris, and other obstructions placed therein or caused by the construction operations. Frequent fording of live streams with construction equipment will not be permitted; therefore, temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by the Owner, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and temporary or permanent structures, and to remove temporary structures. In case of failure on the part of the Contractor to adequately control soil erosion, pollution, and/or siltation, the Owner reserves the right to employ outside assistance or to use his own forces to provide the necessary corrective measures. Such incurred direct costs plus Project Engineering costs will be charged to the Contractor, and appropriate deductions made from the Contractor's monthly progress estimate. **NOTE: There will be no open cut installation of sewer lines across rivers or streams on this project. The contractor should plan on directional boring high density**

polyethylene pipe (HDPE) casing pipe with HDPE sewer lines slipped through the casing across all creeks and rivers.

- J. Payment: Payment for erosion control programs shown on the drawings will be paid for at the unit prices bid. Otherwise the cost of the above work and all cost incidental thereto shall be included in the unit price bid for the item to which the work pertains.

END OF SECTION