

**SECTION 312500  
EROSION AND SEDIMENTATION CONTROLS**

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PART 1 - GENERAL

1.1 SUMMARY

A. Scope

1. Erosion and Sediment control measures must be employed prior to initiating any construction activity and shall be maintained during the construction period. They shall include all measures required to prevent soil erosion from the site until permanent erosion control measures are installed. Work shall be accomplished through, but not limited to, the use of vegetative measures, such as mulching and grassing, and structural practices including berms, dikes, sediment barriers, sediment traps, sediment basins, silt fences, check dams, construction exits and slope drains.
2. Erosion control measures described herein shall be continued until such time as permanent planting and restoration of natural areas is effectively in control of erosion from the site.
3. Failure to install and maintain temporary erosion control measures throughout the construction period may be cause to halt construction by governing authorities until such measures are correctly installed and operational. Activity covered in this contract is regulated by the State's Erosion and Sediment Control Act (O.C.G>A. 12-7-1, et. Seq.) and NPDES General Permit for Stormwater Discharges Associated with Construction Activity. (GAR 100001, GAR 100002 or GAR 100003)

B. Related Sections:

1. Section 033000 – Cast-In-Place Concrete
2. Section 311000 - Site Clearing.
3. Section 312316.13 - Trenching
4. Section 313700 - Riprap

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. Contractor shall comply with the State's Erosion and sedimentation Control Act (latest amendment) and NPDES General Permit for Construction Activity.
- C. "Manual for Erosion and Sediment Control in Georgia" published by the State Soil and Water Conservation Commission in Georgia.

1.3 DEFINITIONS

- A. Land Disturbing Activity: Any activity which may result in soil erosion from water or wind and the movement of sediments into State Waters or onto lands within the State, including but not limited to clearing, grubbing, dredging, grading, excavating, transporting and filling.
- B. Final Stabilization: All soil disturbing activities at the site have been completed, and that for unpaved areas and areas not covered by permanent structures, at least 90% of the soil surface is uniformly covered in permanent vegetation or equivalent permanent stabilization measures (such as the use of rip rap, gabions, permanent mulches or geotextiles) have been employed.

1.4 NPDES STORMWATER PERMITTING

A. Related Documents

- 1. General Permit 10002 – Georgia Department of Natural Resources, Environmental Protection Division.
- 2. Manual for Erosion and Sediment Control in Georgia – State Soil and Water Conservation Commission.

B. Scope of Work

- 1. Comply with requirements of the State of Georgia Department of Natural Resources, Environmental Protection Division, General Permit No. GAR 100002. Permit governs storm water discharges associated with construction activity, specifically infrastructure (linear) construction projects under the national Pollution Discharge Elimination System.

C. Submittals

- 1. Engineer shall submit a copy of the Notice of Intent (N.O.I.) to the local EPD's District Office and the local Soil and Water Conservation Service/EPD Water Protection Branch (depends on local permitting authority) in accordance with the permit on behalf of Owner a minimum of 14 days prior to the start of construction activities.
- 2. Contractor shall assume responsibilities and requirements of Primary Permittee once awarded the contract.

D. Quality Assurance

1. Regulatory Requirements

- a. Contractor shall obtain required permits and licenses in accordance with requirements of Federal Clean Water Act (CWA) and Water Quality Act (WQA). Engineer shall file Notice of Intent (NOI) with Georgia Environmental Protection Division. General contractor shall be Operator/Primary Permittee on Notice of Intent. Contact GA EPD at 404-362-2671 for additional information and permit forms.

- b. Contractor shall provide temporary and permanent erosion control systems as indicated on the Drawings and as necessary to protect adjacent properties and water resources from erosion and sedimentation.
- c. CWA (1972) and WQA (1987) Requirements:
  - i. Where work on this project will disturb 1 or more acres, do not start Work without obtaining a “National Pollution Discharge Elimination System” (NPDES) permit governing discharge of storm water from project site for duration of Contract.
  - ii. Provide storm water management in accordance with NPDES permit and for any enforcement action taken or imposed by Federal or State agencies, including cost of fines, construction delays and remedial actions resulting from failure to comply with all provisions of NPDES permit and SWP3.
  - iii. Keep NOI and ES&PC Plan on site and make available for inspection by appropriate authority having jurisdiction at any time.

E. Responsibilities of the Primary Permittee (General Contractor)

- 1. The following information generally summarizes certain requirements of General Permit No. GAR100002. This information is not intended to represent the complete requirements to comply with the Permit for this project. The General Contractor shall assume responsibilities and requirements of the Primary Permittee and Operator for the Project.

F. Notice of Intent

- 1. The Engineer shall assist the Owner in submitting the Notice of Intent (NOI) and any necessary supporting documentation of Georgia Environmental Protection Division (EPD) fourteen (14) days prior to the start of construction activities. General Contractor shall be the Operator/Secondary Permittee on the Notice of Intent.

G. Erosion, Sedimentation and Pollution Control Plan (ES&PC)

- 1. The ES&PC plan shall be amended if a significant change in the design, construction, operation or maintenance of the Best Management Practices (BMPs) is needed. The Primary Permittee shall be responsible for amending the plans and shall have it certified by a licensed professional. The certification of any necessary supporting documentation shall be sent to EPD.

H. Sampling

- 1. The contractor shall sample in accordance with the following rainfall events.
  - a. The first rainfall event greater than or equal to 0.5 inches and allows for monitoring during normal business hours that occurs after all clearing and grubbing operations are complete in the drainage area of the location selected as the representative sampling location.



3. Any deficiencies identified during the inspection of BMPs shall be corrected within seven (7) days of the inspection.
4. Amendments to the ES&PC plan resulting from inadequate BMP design shall be developed and resubmitted (ES&PC plan to EPD) by a certified professional hired by the Contractor.
5. Any additional erosion and sedimentation control measures necessary during construction to prevent silt and sediment from leaving the site shall be the responsibility of the Contractor.

L. Permit Violations and Penalties

1. Permit violations are grounds for an enforcement action, permit termination (stop work order), or denial of permit renewal application.
2. Failure to properly design, install or maintain BMPs shall constitute a violation of the Permit for Each day on which such failure occurs.
  - a. If monitoring receiving waters: an increase in the turbidity of downstream waters by 10 Nephelometric Turbidity Units (NTUs) for waters classified as trout streams or 25 NTUs for waters supporting warm waters fisheries.
  - b. If monitoring outfalls: turbidity measurements that exceed the value set for the by the NTU Tables presented in Appendix B of Permit No. GAR 100002.
3. A fine or imprisonment or both shall, upon conviction, punish any person who falsifies, tampers with or knowingly renders inaccurate monitoring information, any record or document.
4. The contractor is not excused from compliance with the Permit even if a local government authority has approved the ES&PC Plan or failed to take enforcement action.

M. Record Keeping and Reporting Requirements

1. The contractor shall submit to EPD, by the 15<sup>th</sup> of each month, a summary of storm water discharge monitoring (turbidity) results. A summary of all known violations of the Permit at the site shall be included.
2. The following records are required by the Permit and shall be retained by the Primary Permittee at the construction site or a readily available designated alternate location:
  - a. A copy of NOI and delivery receipt.
  - b. Copy of ES&PC Plan.
  - c. Inspection report from the licensed professional that prepared the ES&PC Plan stating that BMPs have been installed as designed.
  - d. Daily rainfall log.

- e. Daily Inspection logs of entrances and exits (when construction activity has taken place).
  - f. Bi-Weekly inspection logs of all disturbed areas indicating whether or not BMPs identified in the ES&PC Plan are operating correctly. The Primary Permittee shall document any and all known violations.
  - g. Sampling records including date, place and time of sampling and analyses, quality assurance program and turbidity readings.
  - h. Inspection results of all areas that have undergone final stabilization.
- 3. For at least three years, copies of all records must be maintained at the Primary Permittee's place of business.
  - 4. Upon request, the Primary Permittee shall make the ES&PC Plan, CMP and/or records available to EPD or the local government within three (3) days.
- N. Notice of Termination (NOT)
- 1. The Primary Permittee may submit a Notice of Termination (NOT) and any necessary supporting documentation to EPD when the site has undergone final stabilization and all storm water discharges associated with construction have ceased.
  - 2. A NOT shall be filed if the Owner or Operator of the site changes. The Primary Permittee shall notify subsequent owners of the requirements of the Permit.

## PART 2 - PRODUCTS

### 2.1 FILTER FABRIC

- A. Filter fabric for silt fences shall be pervious synthetic polymer filaments forming a stable network so that fibers retain their relative positions. Filter fabric shall be of the type recommended by its manufacturer for the intended application. The filter fabric shall meet the following requirements:
  - 1. Minimum Grab Strength            150 lbs (by ASTM D 1682)
  - 2. Elongation                            25%
  - 3. Retention Efficiency                75%
- B. Silt fence shall be constructed in accordance with details shown in the Drawings or may be a prefabricated proprietary type subject to approval by Engineer.

2.2 HAY BALE BARRIERS

- A. Hay bales shall be well compacted straw, standard size, wire bound. Hay bales may be used as an alternate or supplement to silt fence as approved by Engineer.

2.3 GRASS

- A. Grass Seed for temporary erosion control shall be applied as the rates and dates indicated in the following table.

Species	Rate Per 1,000 Sq. Ft.	Rate Per Acre	PLANTING DATES		
			Mountains Limestone Valley	Piedmont	Coastal
Rye	4.00 Pounds	3 Bushels	7/15 – 12/1	8/15 – 1/1	9/1 – 3/1
Ryegrass	1.00 Pound	40 Pounds	8/1 – 5/1	8/1 – 4/15	8/15 – 4/1
Weeping Lovegrass	0.10 Pounds	4 Pounds	3/15 – 6/15	3/15 – 6/15	2/15 – 6/15
Sudangrass	1.40 Pound	60 Pounds	4/1 – 9/1	4/1 – 9/1	3/1 – 8/1
Browntop Millet	1.00 Pound	40 Pounds	4/1 – 7/1	4/1 – 7/15	4/1 – 7/15
Wheat	4.00 Pounds	3 Bushels	9/1 – 1/1	9/1 – 1/1	9/15 – 2/1

- B. For additional information regarding temporary grassing and mulching, see Chapter 6, Section III of the “Manual for Erosion and Sediment Control in Georgia”.

2.4 FERTILIZER

- A. Commercial grass fertilizer 10N-10P-10K proportion.
- B. Agricultural lime to be applied at a rate of one (1) ton per acre.

2.5 MULCH

- A. Dry straw or hay of good quality, free of weed seed, spread at a rate of 2-1.2 tons per acre.
- B. Wood waste, chips, sawdust or bark spread 2 to 3 inches deep, spread at a rate of 6 to 9 tons per acre.
- C. Erosion control matting or netting, such as excelsior, jute, textile and plastic matting and netting applied in accordance with manufacturer’s recommendations.



2.6 CHEMICALS FOR DUST CONTROL

- A. Calcium Chloride, anionic asphalt emulsion, latex emulsion or resin-in-water emulsion or other approved by the Georgia Department of Transportation may be used for dust control.

PART 3 - EXECUTION

3.1 GENERAL

- A. All disturbed soil areas except those to support paving shall be graded and protected from erosion by grassing. Storm water conveyance systems shall have sediment barriers installed at all entrances, intersections, change in direction and discharge points. All erosion and sediment control BMPs shall be installed in accordance with the plans and the Manual for Erosion and Sediment Control in Georgia (2017).
- B. Erosion control shall be directed toward and have the purpose of controlling soil erosion at its potential source. Downstream sediment entrapment measures shall be employed during the construction period.
- C. A continuing program of installation and maintenance of sediment control measures shall be employed during the construction period.
- D. Erosion Control Schedule
  - 1. Prior to pre-construction conference, Contractor shall submit to the Engineer his proposed erosion control plan for the project in accordance with requirements of this section. The schedule shall be based on analysis of the project conditions and shall be in written form. This schedule shall specifically indicate the sequence of clearing and grubbing, earthwork operations, including trenching and backfilling, construction of permanent erosion control features, and the proposed uses of temporary erosion control features. Schedule shall also include proposed method to prevent pollution of streams, lakes, rivers and other water resources.
  - 2. Contractor shall outline his proposed method of controlling erosion and preventing pollution on public and construction access roads, staging areas and waste disposal areas.
  - 3. No work shall be started until the aforementioned plans and schedules have been accepted by Engineer. Contractor will be responsible for accomplishment of work in accordance with accepted plans and schedules. Engineer may approve changes made necessary by unforeseen circumstances that are beyond the control of the Contractor.
- E. Engineer has the authority to limit the surface area of erodible earth materials exposed by clearing and grubbing, the surface area of erodible earth exposed by excavation and backfill operations and to direct Contractor to provide immediate permanent or temporary erosion and pollution control measures to prevent contamination of adjacent streams or other water courses.
- F. Clearing and grubbing operation shall be so scheduled and performed that grading operations and permanent erosion control features can immediately follow thereafter, if the project

conditions permit, otherwise temporary erosion control measures will be required between successive construction stages.

- G. Engineer will require Contractor to limit the area of excavation, trenching and pipe laying operations in progress commensurate with Contractor's capability and progress in keeping finish grading, mulching, seeding and other permanent and/or temporary measures current with accepted schedule.

### 3.2 TEMPORARY GRASSING AND MULCHING

- A. Where staged construction or other conditions not controlled by Contractor prohibit the completion of work in a continuous manner; Engineer may order Contractor to apply temporary measures current with accepted schedule.
- B. Temporary grass shall consist of sowing a quick growing species of grass suitable to the area and season. Seeding rates shall be in accordance with Paragraph 2.3. Ground preparation will be limited to blading the area to the amount deemed practical by the Engineer for a seedbed and the elimination of water pockets. Fertilizer may be applied at a rate of 14 lbs per 1,000 square feet.
- C. Areas to be mulched need not be to finished grade. The mulched areas may be placed on sloped as steep as 2:1 using a tractor to imbed the mulch into the slope.
- D. Spread wood waste uniformly on slopes that are 3:1 or flatter. No anchoring needed.
- E. Commercial Matting and Netting. Follow manufacturer's specifications included with the material.

### 3.3 GRASSING

- A. See Section 329223 – Grassing.

### 3.4 SEDIMENT TRAPS

- A. Sediment traps shall be installed by Contractor in accordance with details shown on the drawings.
- B. Sediment traps shall be maintained until other erosion control methods can be substituted for them.
- C. Sediment traps shall be cleaned out when they are ½ filled with silt.
- D. Sediment traps shall be removed from the construction area when their use is no longer required.

3.5 SILT FENCES

- A. Temporary silt fence shall be located at all points where surface water can leave the construction area.
- B. Silt fences shall be constructed to remove sediments from flowing water through filtration and sedimentation. Silt fences shall be constructed in accordance with the details shown on the drawings.
- C. Silt fences shall be arranged to create ponding behind them. Provisions shall be made for removing accumulated sediment and maintaining ponding capacity.
- D. Silt fences shall be removed and the area restored when permanent erosion control is effective

3.6 GRADING OPERATIONS

- A. Grading operations shall be scheduled so that the ground surface will be disturbed for the shortest possible time before permanent construction is installed. Large areas shall be maintained as flat as possible to minimize soil transport through surface flow.
- B. Wherever steeper slopes or abrupt changes in grade are required, a diversion or berm shall be constructed at the top of slope to cause surface water to flow along the diversion to a control point to be transported down slope in a slope drain. In no case shall surface water be allowed to flow uncontrolled down slopes.

3.7 CONSTRUCTION IN STREAM BEDS

- A. Unless otherwise approved in writing by Engineer, construction operations in rivers, streams and impoundments shall be restricted to those areas that 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 false-work, sheeting or piling which are to be removed, debris and other obstructions. Frequent fording of live streams with construction equipment will not be permitted; therefore, temporary bridges or other structures shall be used whenever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by Engineer, 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.

3.8 RUN-OFF EROSION AND SEDIMENTATION CONTROL

- A. During construction, route run-off through sedimentation barriers and check dams as practical.
- B. Contractor shall maintain sedimentation devices in functional condition. Sedimentation barriers and check dams shall be cleaned out when these devices are at least 60 percent of their capacity. Defective materials in barriers and check dams shall be replaced.
- C. Contractor shall establish sedimentation barriers at the toe of slopes under construction. These barriers may be relocated and reused after permanent slope stabilization becomes established.

As they are relocated, any defective materials shall be replaced. In addition, all debris and silt at previous location will be removed.

- D. A 6-inch minimum thickness of crushed stone construction exit pad shall be located at all access points to site from public streets in accordance with details shown on the drawings. All construction vehicles leaving construction site shall have mud cleaned from their tires at these points to protect public streets from the transportation of sediment from the site.

### 3.9 DUST CONTROL

- A. Dust raised from vehicular traffic will be controlled by wetting down the access road with water or by use of deliquescent chemical, such as calcium chloride, if the relative humidity is over 30%. Chemicals shall be applied in accordance with the manufacturer's recommendations. There shall be no separate payment to the Contractor for dust control measures. Any costs connected thereto shall be a subsidiary responsibility of the Contractor.

### 3.10 CLEANUP AND REMOVAL

- A. At the time, the permanent erosion control is effective, temporary devices and their accumulated sediments shall be removed.
- B. Silts and deposits removed from sediment control barriers shall be placed in eroded areas and be replanted.
- C. Silt fence and tree protection fence shall be removed for the length of the sewer and disposed of properly.

END OF SECTION 312500