



**SPECIAL PROVISIONS
FOR
BIOSWALES**

**Polk County
IM-080-3(264)124--13-77**

**Effective Date
July 16, 2024**

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

230180.01 DESCRIPTION.

The purpose of this specification is for construction of bioswales for treatment of storm water runoff.

230180.02 MATERIALS.

A. Subdrain Cleanout.

Use solid wall PVC riser pipe size of the same diameter as the adjacent subdrain. Use Type A-2 Cleanouts. Refer to detail in plan.

B. Storage Aggregate.

Provide aggregate complying with Section 4122 of the Standard Specifications, Gradation No. 13a, Class 2 durability.

C. Subdrain.

1. Subdrain shall be perforated flexible dual wall HDPE pipe except at noted below.
2. Subdrain downstream of cleanouts 63 and 69 shall be solid wall PVC water main grade (AWWA C900) pipe. Install rodent guard complying with Standard Road Plan SW-104 at outlet of pipe.

D. Pea Gravel.

Provide aggregate complying with Article 4109.02 of the Standard Specifications, Gradation No. 20 or 21.

E. Modified Soil.

1. Organic Material.

- a. Provide suitable organic material composed of products from plant material such as:

- 1) Compost complying with the following requirements:
 - a) Derived from a well-decomposed source of organic matter.
 - b) Produced using an aerobic composting process, meeting CFR 503 for time, temperature, and heavy metal concentrations.
 - c) No visible admixture of refuse or other physical contaminants, nor any material toxic to plant growth.
 - d) Certified by the US Composting Council's Seal of Testing Assurance (STA) program.
 - e) Conforms to chemical, physical, and biological parameters of AASHTO MP 10-03, with the following additional requirements:
 - Follow US Composting Council's TMECC guidelines for all testing.
 - Organic Matter Content: 30% minimum.
 - pH: between 6.0 and 8.0.
 - Maturity (growth screening): Minimum 90% emergence for all compost to be vegetated.
 - Particle Size:

Sieve Size	Percent Passing
1"	100
3/4"	65-100
3/8"	0-75

- 2) Finely chipped bark (3/8 inch diameter or less)
 - 3) Finely shredded, partially decomposed mulch
 - 4) Peat and sphagnum peat moss
- b. Other organic material approved by the Engineer provided it has no detrimental chemical compounds, does not have high nutrient content that would increase nutrient loading in leachate, will increase the water holding capacity of the soil media and will enhance the ability of the media to capture and hold pollutants to facilitate breakdown is also acceptable.

2. Sand.

Provide clean sand complying with Section 4110 of the Standard Specifications, Gradation No. 1.

3. Soil.

Provide soil taken from the top 6 inches of the A-horizon, have a dark brown to black color, have a granular structure and clay content less than 25% verified with laboratory testing 1 sample per 200 cubic yards.

4. Mixture.

The texture of the modified soil mixture will be loamy sand or sandy loam according to the USDA Soil Classification system, soil textural triangle. A laboratory analysis for particle size or a simplified dispersal method for sand content only can also be used to verify soil texture. Thoroughly blend organic materials, sand and soil to provide a mixture with 2% to 10% suitable organic material, 70% to 88% sand, and 2% to 28% soil by volume.

F. Water.

Supply potable water for consolidating the modified soil layer. In lieu of potable water, supply clean, clear water, free of harmful contaminants, from a source approved by the Engineer.

230180.03 CONSTRUCTION.

A. Pre-Installation Protection.

1. Complete ditch grading, utility installation, and other earth disturbing operations prior to excavating for the bioswale.

2. Prior to installing the bioswales, install erosion and sediment control practices upstream to protect the bioswale from sediment in stormwater runoff.

B. Bioswale Installation.

1. Excavate the trench for the subdrain as specified in the contract documents.
2. Scarify and recompact base of subdrain trench to a depth of 12 inches.
3. Verify that the bottom of the subdrain trench is clear of debris or other material and remains at the proper subgrade elevation to allow for subdrain installation.
4. Prior to the installation of aggregate and modified soil layer, scarify bottom of bioretention cell to a depth of 6 inches. Compaction not to exceed 200 PSI at 6 inches or 1.25 gm/ccm.
5. Install subdrain at the elevation specified in the contract documents. Install cleanouts at locations specified in the contract documents. Install fittings as necessary to accommodate horizontal alignment of subdrain as shown in plans.
6. Place storage aggregate subbase layer to the depth specified in the contract documents.
7. Install pea gravel over storage aggregate subbase layer to the depth specified.
8. Place modified soil in 8 lifts as specified in the contract documents.
9. Uniformly grade and rake the top of the modified soil layer to a flat, smooth, uniform surface.
10. Ensure good housekeeping measures are taken throughout construction, until final acceptance of improvements by owner, to prevent erosion and sedimentation that could reduce the effectiveness of the bioswales. Address any such erosion or sedimentation should it occur, until final acceptance.
11. Do not store materials or operate heavy equipment within or near the footprint of the bioswales after installation has been completed.

230180.04 METHOD OF MEASUREMENT.

Measurement of Bioswales will be in linear feet along the centerline of the ditch.

230180.05 BASIS OF PAYMENT.

- A. Payment will be at the contract unit price per linear foot of Bioswale.
- B. Payment is full compensation for all excavation, grading, subdrain, subdrain fittings, subdrain cleanout, storage aggregate, pea gravel, modified soil and miscellaneous work to construct bioswale. Seeding and turf reinforcement mats are not included in this bid item.