



**SPECIAL PROVISIONS
FOR
BIOCELL INFILTRATION SYSTEM**

**Polk County
TAP-T-1945(835)--8V-77**

**Effective Date
August 21, 2018**

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

PART 1 GENERAL

1.1 SECTION INCLUDES

Provide all labor, materials, equipment and supervision required for the installation of the proposed Biocell Infiltration system.

1.2 RELATED REQUIREMENTS

ANSI Z60.1 - American Standard for Nursery Stock; 2004.

1.3 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.
- B. Plants: Plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.4 SUBMITTALS

- A. Bio-Retention Soil Mix
- B. Mulch
- C. Decorative Aggregate
- D. Cut Stone Blocks

- E. References and contact information for successful biocell installations.

1.5 QUALITY ASSURANCE

- A. Nursery Qualifications: Company specializing in growing and cultivating the plants with 5 years documented experience.
- B. Installer Qualifications: Company specializing in installing biocells with 3 years of documented experience of successful installations and a minimum of three references and contact information
- C. Maintenance Services: Performed by installer.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect and maintain plant life until planted.
- B. Deliver plants immediately prior to placement. Keep plants moist.

1.7 FIELD CONDITIONS

- A. Do not install plants when ambient temperatures may drop below 35°F or rise above 90°F.
- B. Do not install plants when wind velocity exceeds 30 mph.
- C. Existing Utilities:
 - 1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.
 - 2. Underground utilities shown on the drawings have been taken from existing public records, Contracting Authority records and available as-built drawings and are correct to the best of our knowledge and provided for information only.
 - 3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Contracting Authority and utility companies in keeping respective services and facilities in operation. Repair damaged utilities caused by Contractor's negligence to the satisfaction of utility owner at no cost to the Contracting Authority.
 - 4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Engineer and then only after acceptable temporary utility services have been provided.
 - 5. Provide minimum of 48 hour notice to Engineer and receive written notice to proceed before interrupting any utility.
- D. Protection of Persons and Property:
 - 1. Barricade open excavations occurring as part of this work and post with warning lights.
 - 2. Operate warning lights as recommended by authorities having jurisdiction.
 - 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

1.8 WARRANTY

- A. Provide 1 year warranty commencing on date of initial acceptance by the Engineer.

- B. Final Acceptance: Conduct site inspection with Engineer at the end of Warranty period: give notice at least 10 days prior to anticipated date of inspection.
 - 1. Plants shall be alive and in good health and flourishing condition of growth.
 - 2. Remove and replace dead and otherwise unhealthy plants as determined by Engineer.
- C. Replacements: Plants of same size and species as originally specified; replacement plants may be planted in the next growing season; provide an extended warranty commencing on date of replacement.
 - 1. Exclusion: Plants which suffer damage resulting from the following events are excluded from provisions for replacement under provisions of this warranty:
 - a. Vandalism and acts of civil disobedience.
 - b. Physical damage by animals, vehicles, fire and Acts of God including floods, tornadoes, hail and high winds.
- D. Repair grades, lawns and paving damaged as result of plant replacement operations, restore damaged areas to original condition at no additional cost to Contracting Authority.

1.9 MAINTENANCE

- A. Provide maintenance at no extra cost to Contracting Authority; Contracting Authority will pay for water.
- B. Maintain plant life immediately after placement and until plants are well established and exhibit a vigorous growing condition. Provide maintenance for biocell plantings for 2 years.
- C. Irrigate sufficiently to saturate root system and prevent soil from drying out.
- D. Cultivate and weed plant biocell. Weed frequently to prohibit weeds from setting seed.
- E. Repair eroded areas.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Decorative Rock Mulch
3 inch to 6 inch clean, washed Mexican beach pebbles.
- B. Cut Stone Blocks (weirs)
Kasota Gray Wall stone, 6 inch by 8 inch, length varies.
- C. Compacted Aggregate
Provide clean open graded aggregate complying with Section 4115 of the Standard Specifications, Gradation No. 3, Class 2 durability crushed stone.
- D. Manufactured Soil Mix
 - 1. Compost: Provide compost complying with the requirements of the Standard Specifications.
 - 2. Sand: Provide clean sand complying with Section 4110 of the Standard Specifications, Gradation No. 1.
 - 3. Topsoil: Soil that is present at the top layer of the existing soil profile at the Project site, in an uncompacted area.
 - 4. Mixture: Thoroughly blend offsite to provide a mixture with 65% sand by volume.

E. Mulch

1. Shredded hardwood mulch.
2. Color: Natural
3. Depth: 3 inches

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.

2.2 EROSION CONTROL PRODUCTS AND MATERIALS

Temporary Barriers at Curb Cuts: 24 inch by 12 inch by 1/2 inch Steel Plates.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of installation.

3.2 PREPARATION

- A. Maintain bench marks, monuments and other reference points. Re-establish if disturbed or destroyed.
- B. Prior to grading, identify the location and extent of utilities within areas to be graded. Contact appropriate utility companies and departments for removal and relocation of lines which conflict with construction.

3.3 PRE-INSTALLATION PROTECTION

- A. Complete grading, utility installation and other earth disturbing operations prior to excavating for the biocell system.
- B. Prior to installing the biocell, install erosion and sediment control practices as required to protect the cell from sediment in stormwater runoff from disturbed soil.

3.4 BIOCELL INSTALLATION

- A. Excavate biocell system area to the length, width and depth specified in the contract documents. Do not compact the bioretention area subgrade and do not operate heavy machinery on the subgrade. Do not operate heavy machinery in the excavated area while placing the modified soil.
- B. Construct cell during dry weather when subgrade is not frozen.
- C. Place 2 inches of the aggregate evenly in the required drain tile area.
- D. Install slotted underdrain pipe at the elevation specified by Engineer. Install cleanouts at locations specified in the contract documents.
- E. Place remaining aggregate subbase layer to the elevation specified in the contract documents.

F. Place modified soil in 8 to 12 inch lifts to the elevation specified in the contract documents. Overfill area with modified soil by 15% of the specified depth to allow for natural settlement.

G. To expedite the settling process, soak the modified soil matrix as described below:

1. Apply water to uniformly saturate the surface by lightly spraying or sprinkling.
2. Ensure that the entire biocell is uniformly saturated.
3. Add modified soil as required to restore settled surface to finished elevation.

H. Uniformly grade and rake the top of the modified soil layer to a flat, smooth, uniform surface.

3.5 BIOCELL PLANTING INSTALLATION

A. Verify that prepared subsoil and planting beds are properly installed according to the plans and specifications and ready to receive work.

B. Remove non-biodegradable root containers.

C. Set plants in pits in the biocell modified soil. Place plant material so that roots lie in a natural position. Maintain plant life in vertical position. Gently press soil into place around plant.

D. Do not stockpile material on or near the surface of the completed biocell.

E. Protect the completed biocell area from heavy machinery, other construction equipment and pedestrian traffic that would compact soils.

3.6 BIOCELL PLANTING PERIODS

A. Spring planting period: April 1 to June 1.

B. Fall Planting Period: September 1 to September 30.

3.7 METHOD OF MEASUREMENT

Measurement is based on the number of square feet of biocells installed as shown on the plans.

3.8 BASIS OF PAYMENT

Payment will be made at the unit bid price per square footage of biocell extents. Included with this item is supply, deliver, storage, preparation, installation, and all labor, materials, and equipment necessary to install biocell system as indicated on the plans.