

SECTION 32 92 19

GRASSING ESTABLISHMENT (Revision #2, 5/12/2018)

PART 1 GENERAL

The work covered by this section includes furnishing all labor, equipment, and materials required to revegetate those areas impacted by the M-8 dredged material management area construction and any areas susceptible to erosion (i.e., sloped surfaces) surrounding the M-8 site.

1.1 DEFINITIONS

1.1.1 Fine Material

Material measured by dry weight, passing the U.S. standard No. 200 sieve (ASTM D1140)

1.1.2 Plants

Plants shall include any tree or vegetation to be planted in the revegetation area, as noted on the Drawings.

1.1.3 Preliminary Inspection

Preliminary inspection as defined in this section will mean the preliminary inspection of the revegetation area only.

1.1.4 Final Inspection

Final inspection as defined in this section will mean the final inspection of the revegetation area only.

1.1.5 Revegetation Area Establishment Period

The Revegetation Area Establishment Period will be 180 days. It will begin on the day of the preliminary inspection on the condition that the revegetation area meets the Engineer's approval. In the event the revegetation area does not meet the Engineer's approval the Revegetation Area Establishment Period will begin on the day of a subsequent inspection and approval by the Engineer. The Contractor will notify the Engineer at the end of the Revegetation Area Establishment Period in order that the final inspection may be scheduled.

1.2 SUBMITTALS

The following submittals shall be submitted in accordance with SECTION 01 33 00 SUBMITTAL PROCEDURES.

1.2.1 Grassing Establishment Plan

Prior to grassing, the Contractor shall submit a Grass Establishment Plan including the following information:

- a) An outline explaining general procedure, listing of equipment to be used, order of application, and method of application to be used.
- b) Results of topsoil pH and organic content tests on five (5) different soil samples taken as directed by the Engineer. Submit test results, prepared by an independent testing agency.

- c) Submit the seed mixture, tackifiers, mulch, soil amendments, fertilizer, weed control, insect/pest control, and times and rates of application of each.
- d) The name and location of the source, and pH and chloride content, of the water used for grass watering for the Engineer's approval.

1.2.2 Grassing Material Certificates

Prior the delivery of materials, certificates of compliance demonstrating that the proposed materials meet the specified requirements.

1.2.3 Grass Watering and Maintenance Records

Submit to the Engineer a written record of all grass watering and maintenance including, type of action taken, dates, amounts (in pounds or gallons) of material applied (including water), weather conditions, and rainfall amounts as recorded in the nearest local newspaper.

PART 2 PRODUCTS

2.1 PLANTS

Plants shall be nursery grown and shall comply with all required inspections, grading standards and plant regulations in accordance with the Florida Department of Agriculture's "Grades and Standards for Nursery Plants." Plants shall be Florida No. 1 Grade or better. All plants shall be delivered to the site in good condition and shall be free of insects and disease. After installation and throughout the Revegetation Area Establishment Period, the plants shall be adequately watered to maintain a healthy appearance and prevent overstraining.

2.1.1 Species

Within the newly constructed ~~or disturbed~~ areas of the dike crest, ~~and~~ dike side slopes, and all other cleared or disturbed areas, the contractor shall plant the native dune species listed below in accordance with the specified percentages of total plants.

2.1.1.1 Density

Planting shall occur according to the following percentages:

- a) Sea oats (*uniola paniculata*) – 80%
- b) Panic grass (*panicum amarum*) – 10%
- c) Diversity species – 10%

2.1.2 Diversity species

The Contractor shall provide and install a minimum of three additional native species according to the percentages specified above. The contractor shall plant the diversity species and panic grass intermittently among the sea oats, in even distributions. The diversity species shall be in even proportions. Diversity species may include (but not limited to):

- a) Beach elder (*iva imbricata*)
- b) Beach morning glory (*ipomoea imperati*)
- c) Railroad vine (*ipomoea pes-caprae*)

- d) Dune sunflower (*helianthus debilis*)
- e) Sea rocket (*cahile lanceolata*)
- f) Saltmeadow cordgrass (*spartina patens*)

2.1.3 Recommendation of other species

The contractor may recommend additional diversity species for approval by the engineer. The contractor shall submit appropriate documentation identifying the advantages of the proposed species and certifying the proposed species are suitable for the site.

2.2 WATER

Water used for the planting operations and for plant establishment shall be obtained from any approved spring, pond, lake, stream, or ~~municipal~~municipal water supply. The water shall be free of excess and harmful chemicals, acids, alkalis, or any substance which might be harmful to plant growth. The use of onsite surface water and/or the installation of wells are strictly forbidden without the approval of the Engineer. The Contractor may construct a temporary watering system at his own expense. It is the responsibility and an expense of the Contractor to obtain permits for use of water and to ensure that the water used is conducive to plant viability.

PART 3 EXECUTION

3.1 INSPECTIONS

It shall be the Contractor's responsibility to notify the Engineer of the completion of the work and the subsequent need for the preliminary and final inspections. Upon notification by the Contractor of the need for an inspection, the Engineer will have 14 days to schedule and make the necessary inspection.

3.2 CLEARING AND GRUBBING

Clearing and grubbing of the revegetation areas is considered part of the overall clearing of the site and as such, shall be performed in accordance with the SECTION 02262 CLEARING AND GRUBBING

3.3 EXCAVATION AND GRADING

The revegetation areas shall be graded to the dimensions and elevations shown on the Drawings, with no depressions, mounds, or ruts more than 6 inches above/below final grade. Temporary or permanent drainage features such as ditches, swales, or depressional storage areas may be constructed with the approval of the Engineer.

3.4 SAFETY

The Contractor shall follow all manufacturers' safety instructions for the handling of any herbicides and fertilizer.

3.5 PLANTING AND MAINTENANCE

3.5.1 Layout

- 1) Planting units shall be planted on 24-inch centers. Planting units in each row shall be staggered mid-way between planting units in the adjacent rows.
- 2) All plantings shall be 2-inch liner size, grown in multi-well trays (liners) approximately 1.5 inches wide by 1.5 inches long and not less than 2.5 inches deep. Roots shall fill the entire volume of the liner but shall not be root bound.
- 3) For 2-inch planting units, sea oats and panic grasses shall be 8 – 16 inches in height, as measured from the top of the root ball to the apical meristem and have a minimum of three healthy stems.
- 4) Plants shall be 60 – 90 days old, as measured from the approximate time of germination. The engineer may reject planting units younger or older than these specifications.
- 5) The root ball shall be properly moistened to prevent desiccation. All planting units shall be handled, packed, transported, and stored at the installation site in such a manner as to ensure protection against desiccation, thermal stress, disease, or physical damage.
- 6) Plants shall be installed at a minimum depth of 6 inches, as measured from the top of the root ball to the sand surface.

3.5.2 Procedure

- 1) Loosen the soil in bottom of the hole six (6) inches deeper than the required depth of excavation. Position each plant so that it rests in the base of the hole with its root ball level with, or slightly above the position of previous growth. Backfill the hole, eliminate air pockets and bring soil to a smooth and even surface, blending to existing areas.
- 2) The contractor shall “water in” (initially irrigate) all newly installed plants such that the root zone of all newly installed planting units is thoroughly saturated. The contractor shall water and maintain the plants as necessary to meet the minimum specified survival rate at the end of the establishment period.
- 3) Water and fertilize plants as needed to maintain optimum plant health throughout the planting operations and the Revegetation Area Establishment Period. The Contractor shall be responsible for controlling exotic vegetation and weed removal during the establishment period.

3.5.3 Fertilization

- 1) The contractor shall place approximately one-half teaspoon of slow release (90-day) pelletized osmocote fertilizer, or engineer-approved substitute, with an n:p:k ratio of 18-6-12, plus trace elements, beneath the root zone of each planting unit during installation.

3.6 PRELIMINARY INSPECTION

Upon completion of all planting in the revegetation area the Contractor shall notify the Engineer that the revegetation area is ready for preliminary inspection. One hundred percent (100%) of all the plants must be in acceptable condition for Engineer’s approval of the preliminary inspection. Plants shall be rejected that show any indication of probable non-survival or lack of health and vigor, or which do not exhibit the characteristics and conditions for the minimum Grade as specified and in the opinion of the Engineer, will not recover and be within Grade by the end of the 180-day Revegetation Area Establishment Period. Plants rejected during the preliminary inspection shall be removed and replaced with an equivalent healthy plant by the Contractor at no cost to the County. Final grading and elevations must be to the dimensions and elevations shown on the Drawings and approved by the Engineer.

3.7 FINAL INSPECTION

Eight five percent (85%) of all plants must pass final inspection. Plants shall be rejected that show any indication of probable non-survival or lack of health and vigor and in the opinion of the Engineer will not recover. If less than eight five percent (85%) of all plants pass final inspection, rejected plants shall be removed and replaced by the Contractor with an equivalent healthy plant at no cost to the FIND. The quantity of rejected plants to be replaced shall be determined by the Engineer with the intent to provide an eight five percent (85%) survival rate of the original total. This quantity shall be based on the percentage of plants that survived the initial Revegetation Area Establishment Period. When the rejected plants are replaced the Contractor shall request for another preliminary inspection. A subsequent Revegetation Area Establishment Period and final inspection is required for the replacement plants, which shall follow the same procedure as outlined in these specifications for the first Revegetation Area Establishment Period and final inspection.

3.8 RESTORATION AND CLEANUP

The Contractor shall at all times keep his work areas free from accumulations of debris and discarded or unused material. Excess and waste material shall be removed from the site daily. When planting in an area has been completed, the area shall be cleared of all debris, any temporary watering systems, any other related equipment and excess material. Any areas which have been damaged from the planting operation shall be restored to original condition at the Contractor's expense.

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