

ITEM 01613.03 M WETLAND MITIGATION

DESCRIPTION

Under this item the Contractor shall furnish all labor and materials necessary for the creation of mitigation wetlands. The work shall consist of the preparation, amendment, and placement of the wetland planting substrate, the seeding of the wetland site, and the seeding of the upland buffer.

All work is to be accomplished in accordance with the specifications, plans, and as ordered by the Project Engineer, in consultation with the Regional Landscape Architect.

MATERIALS

Seed: Seed shall meet the requirements of § 713-04, Seeds. The seed mixture shall not include the following noxious species: Echinochloa crusgalli, Glyceria maxima, Lythrum salicaria, Phalaris arundinacea, Phragmites australis, Polygonum cuspidate, Typha latifolia, Typha angustifolia, or Typha glauca. Wet, moldy, or otherwise damaged seed shall be rejected. All seed mixtures shall consist of the varieties specified below. Substitutions must be approved by the Regional Landscape Architect (RLA).

Palustrine Emergent Seed Mix (PEM): The PEM seed mix shall consist of 100 percent pure live seed from the following plant species blended on a weight percent basis at the given percentages:

Scientific Name	Common Name	Weight Percent
Agrostis alba	Redtop Grass	20
Agrostis stolonifera	Creeping Bentgrass	15
Carex lurida	Lurid Sedge	5
Carex vulpinoidea	Fox Sedge	15
Eupatorium maculatum	Joe-pye-weed	5
Juncus effusus	Soft Rush	10
Leersia oryzoides	Rice Cutgrass	5
Onoclea sensibilis	Sensitive Fern	5
Panicum virgatum	Switchgrass	10
Scirpus atrovirens	Green Bulrush	<u>10</u>
		100%

Palustrine Scrub/Shrub Seed Mix (PSS): The PSS seed mix amendment shall consist of 100 percent pure live seed from the following plant species blended on a weight basis at the given percentages:

Scientific Name	Common Name	Weight Percent
Alnus rugosa	Speckled Alder	5
Aronia arbutifolia	Red Chokeberry	15
Cephalanthus occidentalis	Buttonbush	5

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Cornus amomum	Silky Dogwood	35
Cornus stolonifera	Red Osier Dogwood	35
Sambucus canadensis	Elderberry	5

Upland Seedmix (Seed Mix A - Road Side Mix)

A- Min. Germination, B- Min. % Germination & Hard Seed, C- Grams Pure Live Seed/m²

<u>Name</u>	<u>Variety</u>	<u>A</u>	<u>B</u>	<u>C</u>
Kentucky Bluegrass (Poa pratensis)	Commercial	75		0.8
Creeping Red Fescue (Festuca rubra)	Commercial	85		7.8
Perennial Ryegrass (Lolium perenne)	Commercial	90		10.0
Chewings Fescue (Festuca rubra commulata)	Commercial	90		3.4

Total Grams Pure Live Seed Per Square Meter = 22.0

Topsoil: Topsoil shall be as specified under §713-01 Topsoil unless otherwise specified in the Contract Documents.

Planting Substrate: The planting substrate shall consist of a blend of clean topsoil and an organic amendment at a ratio to achieve a bulk organic content of at least 8 percent and not greater than 12 percent. Acceptable organic amendments shall include the upper 50 millimeters of an intact forest soil horizon (Ao), the upper 150 millimeters of permanently inundated existing wetland sediments, ground plant matter not to exceed 15 percent woody material by volume, peat, or spent mushroom compost. The Contractor may propose alternative organic amendment sources for approval by the Regional Landscape Architect. Contractor shall apply lime or aluminum sulfate amendment to achieve a pH of between 4.6 to 6.5. All materials used in the wetland planting substrate shall be free from seeds or other plant material from any of the noxious plant species listed in the seeding section above.

Lime: Lime shall be as specified under §713-02 Limestone unless otherwise specified in the Contract Documents. The need for lime and application rate shall be determined by the Regional Landscape Architect after the Contractor performs a soil pH test and supplies the results to NYSDOT.

Aluminum Sulfate: Aluminum sulfate shall contain a minimum sulfur equivalent of 15 percent. A minimum of 90 percent shall pass through a 2.36 mm sieve and a minimum 50 percent shall pass through a 0.250 mm sieve. The need for aluminum sulfate and application rate shall be determined by the

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Regional Landscape Architect after the Contractor performs a soil pH test and supplies the results to NYSDOT.

Fertilizer: Fertilizer shall conform to the requirements of Section 713-03 of the Standard Specifications. Unless otherwise specified, Fertilizer shall be Type No. 3, 10-6-4.

Water: Shall be clean, fresh, free of pollutants, and other substances or matter which could inhibit the vigorous germination and growth of seed.

CONSTRUCTION DETAILS

Inspection: The Contractor shall verify that the sub-grade is prepared in accordance with Section 203 of the Standard Specifications and that it is ready to receive the work of this section. The sub-grade shall be graded to the satisfaction of the Engineer as described in the Contract Documents. Upon acceptance of the sub-grade, work described in this section may begin.

Blending: The Contractor shall test the clean topsoil and organic amendment components separately for organic content and determine the volumetric blending ratio necessary to achieve the required bulk organic content of the planting substrate. The Contractor shall provide the results of the organic content testing and the blending ratio for approval by the Regional Landscape Architect prior to blending the planting substrate. Blending of the planting substrate shall be thorough and shall be conducted at the job site in the presence of the E.I.C. The specified fertilizer shall be thoroughly mixed with the planting substrate during blending at the rate of 225 grams per cubic meter of planting substrate produced.

Placement: Prior to placement of planting substrate, completed areas of rough grade shall be surveyed, and grade stakes indicating the substrate placement grade elevation placed on 10 meter centers. Planting substrate shall be spread on the completed rough grade surfaces at a thickness of approximately 150 millimeters to achieve grade ranges shown on the Plans. Only tracked, low-ground-pressure equipment may directly traverse the planting substrate. To achieve a diverse final grade surface on the planting substrate, the Contractor shall not smooth the surface on final retreat of equipment. Track ruts may be left in place, except on main travel routes that have become repetitively compacted. These areas shall be rough-bladed on retreat by shallow pushes to break up compacted deep ruts. Planting substrate may be applied concurrently with the advancement of completed rough grade. A temporary drainage course shall be maintained in the earthwork area to allow free drainage of all working areas. Temporary drainage courses shall be filled with planting substrate on completion of all other planting substrate placement. The Contractor shall place planting substrate during dry weather and on unfrozen sub-grade.

Liming: The Contractor shall apply lime at an adequate rate (rate shall not exceed three 2500 kg per 4000 sq. meters) based on pH test results (pH testing is to be done by the Contractor) to achieve a pH of between 4.6 to 6.5. Contractor shall broadcast lime prior to seeding. Lime shall be applied under low wind conditions to minimize the loss of lime.

Aluminum Sulfate: The Contractor shall apply aluminum sulfate at an adequate rate (rate shall not exceed three 2500 kg per 4000 sq. meters) based on pH test results (pH testing is to be done by the Contractor) to achieve a pH of between 4.6 to 6.5.

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Seeding: Seeding with the permanent wetland seed mixes shall be completed within 5 work days of the placement of the planting substrate. The Contractor shall avoid application during periods of rain or within twenty four (24) hours preceding expected rainfall. Seeding of the upland area shall be conducted progressively as this area is planted or abandoned from further activity.

- A. The PEM seed mix shall be applied to all areas of the completed planting substrate surface. The PEM seed mix shall be amended with the PSS seed mix when applied to areas designated as PSS planting zones on the Plan Drawings. The Upland Buffer planting area and all other disturbed areas shall be seeded with the Upland Seedmix (Seed Mix A - Road Side Mix).
- B. The Contractor shall seed the Wetland Mitigation Site in the Spring between April 15 through June 15 or in the fall between September 15 and October 15.
- C. Seeded areas shall be watered as needed to maintain optimum germination conditions. Following germination, watering shall be continued at weekly intervals between May 15 and September 15, unless specifically directed by the E.I.C., or until such time that the emergent plants have reached an average 300 millimeters in height.
- D. The Contractor shall maintain all seeded areas immediately after sowing/placement until vegetation is sufficiently established and exhibits a vigorous growing condition.
- E. If adequate vegetative establishment is not attained within the first growing season following application to the satisfaction of the Engineer, the Engineer reserves the right to instruct the Contractor to seed the face and top of the soil with the same seed mixture during the next consecutive planting season.

MAINTENANCE

- A. The Contractor shall maintain all seeded areas immediately after sowing/placement until vegetation is sufficiently established and exhibits a vigorous growing condition.
- B. The Contractor shall supply and apply supplemental irrigation immediately following the installation of permanent seed mixtures. Contractor shall not irrigate when ground is frozen.
- C. Irrigation shall be applied until a uniform and vigorous growth of herbaceous vegetation that is 300 mm minimum in height is established.
- D. The Contractor shall immediately repair any seeded areas damaged by erosion. The Contractor in repairing any seeded areas damaged by erosion shall reseed areas which failed to germinate and within the next consecutive specified planting date-range. All such work shall be completed a minimum of one month prior to the project close-out.

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SUBMITTALS

- A. The Contractor shall submit name, address, and telephone number of manufacturer/suppliers of all seed, fertilizer, and other agricultural products.
- B. The Contractor shall submit a Seedman's Certificate.
- C. The Contractor shall prepare a one-pound dry sample of the seed mixture as specified. The sample shall be submitted to the Regional Landscape Architect or E.I.C. in a sealed, waterproof bag and clearly marked with the proportions of each seed type in sample, date of sample, and names of seed suppliers.

METHOD OF MEASUREMENT

This work will be measured in the number of cubic meters of wetland planting substrate prepared, amended, and placed at the mitigation site. This work will also be measured in the number of square meters of the PEM Seed Mix, PSS Seed Mix, and Upland Seed Mix applied to the mitigation site.

BASIS OF PAYMENT

The price bid per cubic meter shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work as specified. The excavation of the wetland mitigation site shall be paid for under the appropriate excavation item as noted in the Contract Documents. The final seeding for the wetland mitigation site and upland buffer shall be included in the cost for this item.

DISAPPROVED BY E.I. 12-2001

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