SECTION 32 90 00 – SITE PLANTINGS

GENERAL

SUMMARY

Work shall include, but not be limited to acquisition, storage, installation and maintenance of seed, mulch, tree and plant stock.

REFERENCED STANDARDS

Seeding shall be performed in accordance with the provisions of

American Water Works Association (AWWA)

Standard Methods of the Association of Official Agricultural Chemists.

United States Department of Agriculture, (USDA):

Federal Seed Act.

Tree and Shrub Planting shall be performed in accordance with the provisions of

American Standard for Nursery Stock (ASNS).

SUBMITTALS

2-Year Project Maintenance Plan

Within 30 days of the notice to proceed, the Contractor shall submit a 3-year Project Maintenance Plan to be approved by the Owner. This maintenance plan will address vegetation management and weed control and shall specify prior approved water source, materials to be used for irrigation, and schedule for site maintenance inspections and activities.

Vegetation management and weed control in all seeded and planted areas will be the sole responsibility of the Contractor during the 2-year warranty period for vegetation.

Planting time and delivery schedule. Within 30 calendar days after receiving the notice to proceed, submit a time schedule for approval indicating dates for commencement and completion of the following operations:

Tagging of plants in the nurseries.

Delivery of plants to the site.

Completion of work to indicate start of guarantee period.

Plant and Seed Material – provide the following:

Containerized Plants – Final list of plants to be supplied, and certification of compliance with specifications.

Seed Mixes – Final detail of mixes to be supplied, and certification of compliance with specifications

PRODUCTS

PLANT MATERIALS

SEED

Native Seed Mix - Custom seed mixes.

Seed mix for all restored areas shall be applied at rate of 25 PLS lbs per acre.

Additional cover crop shall consist of oats and winter wheat at a rate of 20lb PLS per acre.

The specified seed mixes shall be healthy and vigorous and free of noxious weed seeds. Any adjustments or substitutions in seed species or composition shall be reviewed by the RPR. Seeds that have become wet, moldy, or otherwise damaged, or do not meet the Specifications shall be legally disposed of offsite and replaced at Contractor’s expense.

Native seed (with cover crop) shall be installed in areas indicated at a density of 25 PLS lb/acre and shall be NEWP’s proprietary New England Conservation seed mix, supplied by New England Wetland Plants, Inc., 820 West Street, Amherst, MA 01002 (413) 548-8000, or approved equal. Seed mix shall be free of invasive species and shall contain the following species, or as approved by the Engineer:

|  |  |
| --- | --- |
| **Botanical Name** | **Common Name** |
| *Elymus virginicus* | Virginia Wild Rye |
| *Schizachyrium scoparium* | Little Bluestem |
| *Andropogon gerardii* | Big Bluestem |
| *Festuca rubra* | Red Fescue |
| *Sorghastrum nutans* | Indian Grass |
| *Panicum virgatum* | Switch Grass |
| *Chamaecrista fasciculata* | Partridge Pea |
| *Desmodium paniculatum* | Panicledleaf Tick Trefoil |
| *Verbena hastata* | Blue Vervain |
| *Asclepias tuberosa* | Butterfly Milkweed |
| *Rudbeckia hirta* | Black Eyed Susan |
| *Helenium autumnale* | Common Sneezeweed |
| *Aster pilosus (Symphyotrichum pilosum)* | Heath Aster |
| *Solidago juncea* | Early Goldenrod |
| *Agrostis perennans* | Upland Bentgrass |

For restoring disturbed lawn areas, at a density of 25 PLS lb/acre, provide the grass seed mixture approved by the Engineer, having the following composition:

48 percent Creeping Red Fescue

4 percent Red Top

48 percent Tall Fescue

Any seed mixes other than listed above must meet prior written approval by the Owner.

All seed mixes must follow these requirements for inspection and acceptance. Each bag of seed delivered shall be clearly labeled including the following information.

The common name genus, species and subspecies (when applicable).

The amount of Pure Live Seed (PLS) pounds of each species in each seed mix.

The total delivered weight, in pounds, of each seed mix.

The state and county of origin of each species of seed used in mixes.

The name and address of the seed supplier.

The delivered seed mix shall be healthy and vigorous and free of noxious weed seeds. Seeds that have become wet, moldy, or otherwise damaged, or do not meet the Specifications will be rejected at no cost to the Owner.

MULCH

Mulch shall be seedless and weed-free straw mulch.

PLANT MATERIALS

Native Shrubs and Trees

1. Imported Plant Materials (Furnish and Install)
	1. All plants shall be species native to Maine and nursery grown in accordance with good horticultural practices. Plant materials shall be healthy, vigorous, well-rooted, well branched, densely foliated when in leaf, free of disease and insects (eggs or larvae) and established in the container in which they are growing. They shall have tops of good quality and be in a healthy growing condition.
	2. Any adjustments or substitutions in plants species, sizes, container types, or quantities, shall be approved by the RPR. Immediately upon delivery and until installation, plant material shall be shaded and watered to ensure that the plants remain alive and healthy. The Contractor shall store plants in a shaded on-site location and kept moist throughout the entire storage and installation period. A thorough watering is required every 24 hours. Plants should not be stored on-site for more than 2 weeks.
	3. Plant materials must originate no more than 100 miles from the project site, unless approved by the RPR. Proof of this local supply shall be submitted to the RPR as a signed letter from the grower.
	4. All plants shall be inspected by the RPR prior to installation.
2. Imported Containerized Plants (Furnish and Install)
	1. Containerized plants shall be used in areas designated for re-vegetation as shown on the Drawings. Containerized plants shall be supplied by the Contractor and shall include shrub and tree seedlings. Plant materials shall be healthy and vigorous with well-developed root systems.
	2. Containerized plants shall be well established in the container with a root system sufficiently developed to retain its shape and hold together when removed from the container. Plants shall not be pot-bound, nor have kinked, circling or bent roots.
	3. Containers shall be sufficiently rigid to hold the root mass during propagation and protect it during shipping. The dimensions of containers shall be pre-approved by the RPR.
	4. Potted stock shall conform to American Standard for Nursery Stock guidelines for caliper versus container size (ASNS Z60.1-2004).

Imported (Contractor Furnish and Install) Plant Quantities as shown:

Distribution will be clumped and randomized and approved by the RPR prior to installation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Common Name*** | ***Latin Name*** | ***# Plants*** | ***Spacing on-center, on-average*** | ***Moisture Tolerance*** |
| **TREES** |   | **5 gal** |  |  |
| Red oak | Quercus rubra | \*\* | 20 ft | Mesic |
| Red maple | Acer rubrum  | \*\* | 20 ft | Mesic |
| Silver maple | Acer saccharinum | \*\* | 20 ft | Mesic |
| Grey birch | Betula populifolia | \*\* | 20 ft | Mesic |
| Yellow birch | Betula alleghaniensis | \*\* | 20 ft | Dry Mesic |
|  |  | 2 inch caliper |  |  |
| Sugar Maple | Acer saccharum | \*\* | Spot placement |  |
|   |   | 29 |  |  |
| **SHRUBS** |   | **2 gal** |  |  |
| Bayberry | Myrica pensylvanica | \*\* | 10 ft | Dry Mesic |
| Meadowsweet | Spirea alba | \*\* | 10 ft | Dry Mesic |
| Black chokeberry | Aronia melanocarpa | \*\* | 10 ft | Dry Mesic |
| Cranberry bush | Viburnum opulus | \*\* | 10 ft | Mesic |
| Staghorn sumac | Rhus typhina | \*\* | 10 ft | Mesic |
| Northern arrow-wood | Viburnum dentatum var. lucidum | \*\* | 10 ft | Mesic |
| steeplebush | Spirea tomentosa | \*\* | 10 ft | Mesic |
| Red-osier dogwood | Cornus alba | \*\* | 10 ft | Wet Mesic |
| Common elderberry | Sambucus canadensis  | \*\* | 10 ft | Mesic |
| Summersweet | Clethra alnifolia | \*\* | 10 ft | Mesic |
|   |   | 100 |  |  |

\*\*Quantities to be provided in future design submittal.

EXECUTION

SEED

Apply Seed at a rate specified by the seeding mix.

Seeding Near Bank

Do not walk on seeded areas after germination period has commenced.

Seeding (All Disturbed Areas):

Dry seed shall be broadcast according to Section 2.1.A. for all areas. Seed may be broadcast mechanically or by hand. Seed application method must be pre-approved by the RPR. Hydroseeding is preferred for areas with slopes steeper than 3:1.

Care of Seeded Areas. All seeded areas shall be protected and maintained throughout the construction of the project and until the work is accepted. No construction traffic will be allowed over a seeded or planted area once the seed and erosion control measures have been completed. Foot traffic shall be minimized; workers shall travel along completed banks only in designated areas. Any damage to seeded areas caused by construction traffic or construction activities shall be repaired and re-seeded at no cost to the Owner.

Re-Seeding:

Dry seed shall be broadcast on re-seeding areas in densities specified above for disturbed areas.

MULCHING

Straw mulch shall be applied at 2 tons (4000lb) per acre.

Disturbed areas, as shown in the Drawings, shall be seeded and mulched as soon as practical after completion of grading operations, but within the period specified for germination of seed.

Mulch shall be applied over areas disturbed during construction, as well as around tree and shrub installations. The Item ‘Mulching’ does not pertain to mulching associated with Item ‘Erosion, Pollution and Water Control’ described in Section 31 25 00.

Mulching:

The mulch shall be placed on the same date the seed is applied to the extent practicable.

Mulch shall be placed over seeded areas.

Straw Mulch shall be seed free, consisting exclusively of stalks or stems of grain after threshing.

PLANTING

1. Planting shall occur in areas as shown on the Drawings.
2. Planting shall not be permitted during the following conditions unless otherwise approved:
	1. Temperatures less than 32 degrees Fahrenheit
	2. Temperatures greater than 90 degrees Fahrenheit
	3. Wind velocities greater than 20 mph.
3. Apply water as needed during and after plant installation to insure maximum success. During the construction of all bank treatments that incorporate plant material, water as required to minimize stress on the plant materials.
4. Immediately prior to installation of all woody plants, all soil, erosion control fabric, or other material within one foot of the woody plants shall be thoroughly watered with 0.15 gallon per square foot.
5. Containerized plants:
	1. Planting hole size: The depth of the hole shall be 1.5 times the height of the root mass.
	2. Subsurface conditions: The RPR shall be notified immediately of all subsurface drainage or soil conditions which the Contractor shall consider detrimental to growth or survival of plant material. Contractor shall state condition and submit proposal for correction, including the cost of the correction. No work shall be performed on the affected portion until approval of the correction method is obtained from the Owner in writing.
	3. Small cuts may be made in the coir fabric to allow for plant installation. Cuts shall be a single slit no longer than 12 inches and parallel to the river bank and shall be sealed with stakes, sewing or other means as approved by the RPR.
	4. Immediately prior to planting containerized plant material, the root-earth mass shall receive three vertical cuts, each spaced equidistant about the perimeter. Each cut, about 1/2-inch deep, shall begin at the top of the root-earth mass and continue to the bottom.
	5. Containers shall be separated from the plant immediately prior to planting to prevent desiccation of the roots. All plants shall be set approximately plumb and to a depth sufficient for the top of the root mass to be even with the soil surface. Topsoil shall then be filled in around the root mass to half the depth, tamped to remove all air pockets and thoroughly watered, after which the remainder of the topsoil shall be placed. Earth saucers or water basins shall then be provided and the plant thoroughly watered.
	6. Some plants will be concentrated in near-bank regions. Exact planting locations will be determined by the RPR in the field.
6. Prevention of invasive species infestation: Prior to planting or seeding, all personnel must ensure that equipment, clothing and footwear is clean and free of seeds. Equipment and personnel may be subject to inspection prior to site entry.
7. Irrigation:
	1. Immediately prior to and following the installation of all potted stock, all soil that contacts the plants shall be thoroughly watered with 0.15 gallon per square foot.
	2. Fall and Winter Irrigation – If planting is completed after April 1, irrigation shall extend as needed from the time of planting until the subsequent fall dormant period. If planting is completed from November 1 to March 31, planted areas shall not receive irrigation until April 1 of the spring following fall construction.
	3. In case of drought, this plan may be altered with approval by the RPR.

TREE AND SHRUB PROTECTION

Rodent Protection

A 15” solid plastic rodent guard is necessary for Rodent Protection.

Rodent Protection must be dug into the ground 6 inches to prevent voles burrowing beneath the plastic.

Rodent Protection will be installed on all trees and shrubs.

Quality Control and Assurance

The Contractor shall provide all equipment, labor, materials, and technical expertise to install, maintain and irrigate site plantings through the completion of the project, demobilization, and for a minimum 2-year period.

Maintenance Plan

* + 1. Within 30 days of the project start date, the Contractor shall develop a 1-year Project Maintenance Plan to be approved by the Engineer. This maintenance plan will address vegetation management and weed control and shall consider provision of a prior approved water source, materials to be used for irrigation, and schedule for site maintenance inspections and activities.
		2. Vegetation management and weed control in all seeded areas will be the sole responsibility of the Contractor during the 1-year warranty period for vegetation, and shall be detailed in the Project Maintenance Plan. This may include, but is not limited to, irrigation and weed control.

Seed: Minimum guarantee requirements

* + 1. Seeded areas guarantee: Areas that do not meet seed success criteria for native seed mix establishment on July 1st after the Substantial Completion Date shall be re-seeded during the first available seeding period, as determined by the Owner. Re-seeding shall be performed at the Contractor’s expense, and in conformance with these specifications.
		2. Seeding success criteria: The Owner will conduct surveys to verify seeding success. An area will be considered satisfactory if it meets the following criteria:
		3. A minimum of 80 percent intended vegetative cover (noxious weeds and undesirable non-native species will not be considered to be intended vegetation);
		4. Not more than 10% of the seeded area with bare spots larger than 1 square foot; and

 Vegetation in healthy condition.

Tree, Shrub and Plant stock: Minimum guarantee requirements

* + 1. Tree and Shrub guarantee: The Contractor shall replace all potted plants judged by the Owner to be dead or in less than vigorous health. Plant replacements shall be of the same species, quality and size as originally installed, or with substitutes pre-approved in writing by the Owner. Replanting shall be performed at the Contractor’s expense.
		2. Replanting shall be conducted according to the original planting specifications.
		3. The Owner will conduct inspections at 1 year dates following Substantial Completion Date, and will notify Contractor of plants needing replacement.
		4. Replanting must be conducted within 30 days of notification during acceptable planting periods (March – June, Sept. – Nov.). Deviations from this plan must be pre-approved in writing by the Owner.

END OF SECTION 32 90 00