Title: REVISIONS TO STANDARD SPECIFICATIONS – SECTIONS 610-615 and SECTION 713 and SPECIAL SPECIFICATIONS FOR POST-PLANTING CARE WITH REPLACEMENT

Superseded By

EB 15-031

Effective 9/28/15

ADMINISTRATIVE INFORMATION:
- This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of September 6, 2012.
- This EI supersedes EI 09-036, EI 08-013, EI 06-23, EI 06-024, EI 03-040 and EB 03-059.
- The revisions issued with this EI will be incorporated into the next update of the Standard Specifications. The special specification issued will be available on the department website through https://www.dot.ny.gov/main/business-center/engineering/specifications.

PURPOSE: The purpose of this EI is to issue revised Standard Specifications related to Landscape Development within Sections 610-615 and Section 713 of the Standard Specifications. Also being issued is a special specification for Post Planting Care with Replacement for various plants and trees.

TECHNICAL INFORMATION:
- Re-writes to Section 610 of the Standard Specifications include the following:
  1. Revises construction details and methods.
  2. Modifies and adds pay items to achieve better results.
  3. Combines existing Section 610, Section 612, Section 613 and the watering pay item from Section 615 of the Standard Specifications to improve D/M/WBE certification and include similar work types under the same Section.
- Re-writes to Section 611 of the Standard Specifications include the following:
  1. Revises construction details and methods.
  2. Adds Transplanting to the Standard Specifications to allow for the salvage of existing plant material.
  3. Replaces the Care of Planting and Period of Establishment Sections with a new POST PLANTING CARE pay item. The revised specifications do not provide automatic replacements of dead plant materials.
- Section 612 – Vacant.
- Section 613 - Vacant.
- Re-writes to Section 614 of the Standard Specifications include the following:
  1. Updates construction details and methods.
  2. Tree Root Aeration and Root pruning are added to the Standard Specifications.
  3. There is no longer a separate pay item for removal of trees 4 inches and under in diameter at breast height. Removal of plant material in this size range must be included for payment under clearing and grubbing.
Revision to Section 615 of the Standard Specifications:
1. Changes the title of Section 615 to Landscape Appurtenances.
2. Updates Specification to clearly indicate purpose of Section 615.

Re-writes to Section 713 of the Standard Specifications include the following:
1. Revises Material Requirements for the Landscape Development Materials.
2. Refines the topsoil choices available under Section 713-01.
3. Removes un-sustainable materials such as peat moss.
5. Adds Shredded Bark Mulch Section 713-16.
6. Expands the choices of mulch for turf establishment.

The revised specifications provide clearer direction which should result in fewer disputes.

IMPLEMENTATION:
Main Office Design Quality Assurance Bureau will insert the revisions to the standard specifications into contract proposals beginning with the projects submitted for the letting of 9/6/2012.

DISAPPROVED STANDARD SPECIFICATIONS:

Disapproved proposal insert notes – Proposal insert notes for Section 610, Section 611, Section 713 issued by EI 08-013 3/28/08 are hereby disapproved as of 9/6/2012.

Disapproved contract pay items as of 9/6/2012:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>610.0101</td>
<td>Applying Soil Amendments</td>
</tr>
<tr>
<td>610.0110</td>
<td>Applying Fertilizer</td>
</tr>
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<td>610.0111</td>
<td>Applying Limestone</td>
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<td>610.0112</td>
<td>Applying Mycorrhizal Fungi</td>
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<td>610.0113</td>
<td>Applying Moisture Retention Additive</td>
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<tr>
<td>610.0203</td>
<td>Establishing Turf</td>
</tr>
<tr>
<td>610.03</td>
<td>Establishing Wildflowers</td>
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<tr>
<td>610.04</td>
<td>Compost</td>
</tr>
<tr>
<td>611.0101XY</td>
<td>Planting- Major Deciduous Trees</td>
</tr>
<tr>
<td>611.0201XY</td>
<td>Planting- Minor Deciduous Trees</td>
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<tr>
<td>611.0301XY</td>
<td>Planting- Coniferous Trees</td>
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<td>611.0401XY</td>
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<td>611.0501XY</td>
<td>Planting- Evergreen Shrubs</td>
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<tr>
<td>611.0601XY</td>
<td>Planting- Vines &amp; Groundcovers</td>
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<tr>
<td>611.0701XY</td>
<td>Planting- Special Plant Material</td>
</tr>
<tr>
<td>612.01</td>
<td>Sodding including Topsoil Bed</td>
</tr>
<tr>
<td>613.02</td>
<td>Placing Topsoil-Type A</td>
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<tr>
<td>613.03</td>
<td>Placing Topsoil-Type B</td>
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<tr>
<td>614.01xx</td>
<td>Care of Trees</td>
</tr>
<tr>
<td>614.02</td>
<td>Selective Thinning</td>
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<td>614.03xx</td>
<td>Tree Removal</td>
</tr>
<tr>
<td>615.03</td>
<td>Watering Vegetation</td>
</tr>
</tbody>
</table>
DISAPPROVED SPECIAL SPECIFICATIONS:
• All current special specifications (Regional and Main Office), in both Metric and US Customary, starting with 610, 611, 612, 613, 614 and 615 are hereby disapproved.

NEW STANDARD SPECIFICATIONS:
• New Contract Pay Items issued as of 9/6/2012.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Description</th>
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</thead>
<tbody>
<tr>
<td>610.0501</td>
<td>Fertilizer</td>
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<tr>
<td>610.0502</td>
<td>Fertilizer</td>
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<td>610.06</td>
<td>Limestone</td>
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<td>610.0701</td>
<td>Mycorrhizal Fungi</td>
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<td>610.0702</td>
<td>Mycorrhizal Fungi</td>
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<td>610.08</td>
<td>Moisture Retention Additive</td>
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<td>610.0901</td>
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<td>610.0902</td>
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<td>610.10</td>
<td>Compost</td>
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<tr>
<td>610.1101</td>
<td>Mulch for Planting Type A, B &amp; D – Wood Chips and Shredded Bark</td>
</tr>
<tr>
<td>610.1102</td>
<td>Mulch for Planting Type C – USDA APHIS Protocol Wood Chips</td>
</tr>
<tr>
<td>610.1103</td>
<td>Mulch for Planting Type E – Pine Nugget</td>
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<td>610.1201</td>
<td>Permeable Weed Control Landscape Fabric</td>
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<tr>
<td>610.1202</td>
<td>Permeable Weed Control Landscape Fabric with Herbicide</td>
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<tr>
<td>610.13</td>
<td>Weed Removal</td>
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<tr>
<td>610.1401</td>
<td>Topsoil – Reuse On-Site Materials</td>
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<tr>
<td>610.1402</td>
<td>Topsoil – Roadside</td>
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<tr>
<td>610.1403</td>
<td>Topsoil – Lawns</td>
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<tr>
<td>610.1404</td>
<td>Topsoil – Special Planting Mix</td>
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<td>610.1405</td>
<td>Topsoil - Acidic</td>
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<tr>
<td>610.1406</td>
<td>Topsoil – On-Site Wetland Materials</td>
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<td>610.1407</td>
<td>Topsoil – Wetland Materials</td>
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<tr>
<td>610.15</td>
<td>Preparation of Subsoil for Turf Establishment</td>
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<tr>
<td>610.1601</td>
<td>Turf Establishment – Roadside</td>
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<tr>
<td>610.1602</td>
<td>Turf Establishment - Lawns</td>
</tr>
<tr>
<td>610.17</td>
<td>Wildflower Seeding</td>
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<tr>
<td>610.18</td>
<td>Sodding</td>
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<tr>
<td>610.19</td>
<td>Watering Vegetation(1000 Gal.)</td>
</tr>
<tr>
<td>610.21</td>
<td>Mowing</td>
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<tr>
<td>610.22</td>
<td>Mowing Limits Markers</td>
</tr>
<tr>
<td>611.01xy</td>
<td>Planting - Major Deciduous Trees</td>
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<tr>
<td>611.02xy</td>
<td>Planting - Minor Deciduous Trees</td>
</tr>
<tr>
<td>611.03xy</td>
<td>Planting - Coniferous Trees Each</td>
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<tr>
<td>611.04xy</td>
<td>Planting - Deciduous Shrubs Each</td>
</tr>
<tr>
<td>611.05xy</td>
<td>Planting - Evergreen Shrubs Each</td>
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<tr>
<td>611.06xy</td>
<td>Planting - Vines &amp; Groundcovers</td>
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<tr>
<td>611.07xy</td>
<td>Planting – Herbaceous Plants</td>
</tr>
<tr>
<td>611.10</td>
<td>Transplanting, 0 to 48 inches in height</td>
</tr>
<tr>
<td>611.11</td>
<td>Transplanting, over 48 inch to 72 inches in height</td>
</tr>
<tr>
<td>611.12</td>
<td>Transplanting, over ¾ inch to 3 inches DBH</td>
</tr>
<tr>
<td>611.13</td>
<td>Transplanting, over 3 to 6 inches DBH</td>
</tr>
</tbody>
</table>
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611.14 Transplanting, over 6 to 12 inches DBH
611.15 Transplanting, Vines & Groundcovers
611.16 Transplanting, Herbaceous Plants
611.17 Portable Drip Irrigation System
611.18 Removal of Portable Drip Irrigation System
611.19 Post Planting Care
611.20 Post Planting Care
611.21 Rodent Guard
614.0411 Care of Trees up to 12” Diam. at Breast Height – Pruning
614.0421 Care of Trees Over 12” to 24” Diam. at Breast Height - Pruning
614.0431 Care of Trees Over 24” to 36” Diam. at Breast Height - Pruning
614.0441 Care of Trees Over 36” to 48” Diam. at Breast Height – Pruning
614.0451 Care of Trees Over 48” to 60” Diam. at Breast Height – Pruning
614.0461 Care of Trees Over 60” Diam. at Breast Height – Pruning
614.05 Improvement of Vegetated Areas
614.0601nn Tree Removal Over 4” to 6” Diam. Breast High
614.0602nn Tree Removal Over 6” to 12” at Breast Height
614.0603nn Tree Removal Over 12” to 18” at Breast Height
614.0604nn Tree Removal Over 18” to 24” at Breast Height
614.0605nn Tree Removal Over 24” to 36” at Breast Height
614.0606nn Tree Removal Over 36” to 48” at Breast Height
614.0607nn Tree Removal Over 48” to 60” at Breast Height
614.0608nn Tree Removal Over 60” to 72” at Breast Height
614.0701 Pre-Existing Stump Removal up to 24” diameter at 6 inches above grade
614.0702 Pre-Existing Stump Removal over 24” to 48” diameter at 6 inches above grade
614.0703 Pre-Existing Stump Removal over 48” diameter at 6 inches above grade
614.08 Tree Root Zone Treatment(Vertical Mulching/Aeration)
614.09 Tree Root Pruning

NEW STATEWIDE SPECIAL SPECIFICATION:
US Customary
Item No. Item Description
611.19010024 Post Planting Care with Replacement - Major Deciduous Trees
611.19020024 Post Planting Care with Replacement - Minor Deciduous Trees
611.19030024 Post Planting Care with Replacement - Coniferous Trees
611.19040024 Post Planting Care with Replacement - Deciduous Shrubs
611.19050024 Post Planting Care with Replacement - Evergreen Shrubs
611.19060024 Post Planting Care with Replacement - Vines, Groundcovers
611.19070024 Post Planting Care with Replacement - Herbaceous Plants

Metric
611.1901--24 Post Planting Care with Replacement - Major Deciduous Trees
611.1902--24 Post Planting Care with Replacement - Minor Deciduous Trees
611.1903--24 Post Planting Care with Replacement - Coniferous Trees
611.1904--24 Post Planting Care with Replacement - Deciduous Shrubs
611.1905--24 Post Planting Care with Replacement - Evergreen Shrubs
611.1906--24 Post Planting Care with Replacement - Vines, Groundcovers
611.1907--24 Post Planting Care with Replacement - Herbaceous Plants
TRANSMITTED MATERIALS:
This EI transmits standard specification revisions *Landscape Development* and *Landscape Development Materials* Sections 610-615 and Section 713. Both Metric and U.S. Customary revisions are attached. It also transmits Special Specifications for Post Planting Care and Replacements items 611.190X0024 in both metric and USC versions.

BACKGROUND: This update to the Standard Specifications is intended to address some long standing issues with the current specifications and material requirements. The current specifications do not always result in a cost effective quality product. This major revision should bring the Standard Specifications more in line with current construction practices and materials available to the contracting industry.

CONTACT: Direct questions regarding this issuance to Peter Dunleavy, 518-457-1730 or via E-mail at pdunleavy@dot.state.ny.us.
LANDSCAPE DEVELOPMENT

Make the following changes to the Standard Specifications dated May 1, 2008. Pages 541 to 556, **Delete** Sections 610 – 615 in their entirety and, **Replace** them with the following:

**SECTION 610 – GROUND VEGETATION – PREPARATION, ESTABLISHMENT AND MANAGEMENT**

610-1 DESCRIPTION.

610-1.01 Topsoil. This work shall consist of furnishing, screening, storing, stockpiling and placing topsoil in accordance with the contract documents and as directed by the Engineer.

610-1.02 Preparation of Subsoil for Turf Establishment. This work shall consist of ground preparation when topsoil is not included in the work prior to establishment of turf in accordance with the contract documents and as directed by the Engineer.

610-1.03 Turf Establishment. The work shall consist of ground preparation and establishing turf in accordance with the contract documents and as directed by the Engineer.

610-1.04 Wildflower Seeding. The work shall consist of ground preparation, furnishing and placing wildflower seeding materials and caring for wildflower areas in accordance with the contract documents and as directed by the Engineer.

610-1.05 Sod. The work shall consist of ground preparation, furnishing, installing and caring for sod in accordance with the contract documents and as directed by the Engineer.

610-1.06 Soil Amendments. The work consists of furnishing and placing soil amendments in accordance with the contract documents and as directed by the Engineer.

610-1.07 Compost. The work consists of furnishing, placing and incorporating compost in accordance with the contract documents and as directed by the Engineer.

610-1.08 Mulch for Planting. The work consists of furnishing and placing mulch, in accordance with the contract documents and as directed by the Engineer.

610-1.09 Permeable Weed Control Landscape Fabric. The work consists of furnishing and placing permeable landscape fabric for weed control, in accordance with the contract documents and as directed by the Engineer.

610-1.10 Watering Vegetation. This work shall include watering turf, sod, wildflower seeding, trees, shrubs, ground covers, vines, other plants, and filling portable drip irrigation systems in accordance with the contract documents and as directed by the Engineer.

610-1.11 Weed Removal. This work shall consist of removal and disposal of all native and non-native weeds including roots from newly established turf and sod areas, wildflower seeded areas, tree and shrub pits and plant beds in accordance with the contract documents and as directed by the Engineer.

610-1.12 Mowing. This work shall consist of mowing newly established seeded or sodded areas including the removal and disposal of any debris and litter which has accumulated prior to or between mowings, in accordance with the contract documents and as directed by the Engineer.

610-1.13 Mowing Limits Markers. This work consists of furnishing and installing mowing limit markers in accordance with the contract documents and as directed by the Engineer.
610-2 MATERIALS

610-2.01 Topsoil. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing. Excavated material from earthwork operations defined in Section 203 Excavation and Embankment that is unsuitable for embankments but conforms to §713-01 Topsoil is acceptable.

Topsoil 713-01

610-2.02 Preparation of Subsoil for Turf Establishment. None specified.

610-2.03 Turf Establishment. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

<table>
<thead>
<tr>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>712-01</td>
</tr>
<tr>
<td>Seeds</td>
<td>713-04</td>
</tr>
<tr>
<td>Mulch For Turf Establishment and Erosion Control</td>
<td>713-11</td>
</tr>
<tr>
<td>Mulch anchorage</td>
<td>713-12</td>
</tr>
<tr>
<td>Straw</td>
<td>713-19</td>
</tr>
</tbody>
</table>

610-2.04 Wildflower Seeding. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

<table>
<thead>
<tr>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
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<td>Mulch For Turf Establishment and Erosion Control</td>
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</tr>
<tr>
<td>Mulch anchorage</td>
<td>713-12</td>
</tr>
<tr>
<td>Straw</td>
<td>713-19</td>
</tr>
</tbody>
</table>

610-2.05 Sod. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

<table>
<thead>
<tr>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Topsoil</td>
<td>713-01</td>
</tr>
<tr>
<td>Sod</td>
<td>713-14</td>
</tr>
</tbody>
</table>

610-2.06 Soil Amendment. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

<table>
<thead>
<tr>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>712-01</td>
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<tr>
<td>Limestone</td>
<td>713-02</td>
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<td>Fertilizer</td>
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<td>Mycorrhizal Fungi</td>
<td>713-09</td>
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<tr>
<td>Moisture Retention Additive</td>
<td>713-10</td>
</tr>
<tr>
<td>Sulfur</td>
<td>713-17</td>
</tr>
</tbody>
</table>

610-2.07 Compost. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Compost 713-15

610-2.08 Mulch for Planting. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Mulch for Planting 713-05

610-2.09 Permeable Weed Control Landscape Fabric. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Weed Control Barriers 713-18
610-2.10 Watering Vegetation. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Water 712-01

610-2.11 Weed Removal. None specified.

610-2.12 Mowing. None specified.

610-2.13 Mowing Limits Markers. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Materials for the Protection of Plants 713-08

610-3 CONSTRUCTION DETAILS

610-3.01 Topsoil.

A. General. The subsoil within the areas to be covered by topsoil shall be graded so that the completed work after the topsoil is placed shall conform to the specified lines and grades. The Contractor shall scarify or till the surface of the subsoil to a depth of 6 inches before the topsoil is placed to permit bonding the topsoil with the subsoil. Tillage by disking, harrowing, raking or other approved methods shall be accomplished in such a manner that depressions and ridges formed by tillage shall be parallel to the contours.

Topsoil in an unworkable condition due to excessive moisture, frost, or other conditions shall not be placed until its consistency is workable for spreading. Topsoil shall be placed on the designated area and spread to the depth specified in the contract documents or a minimum of 4 inches for turf areas and 3 inches for sod areas.

The finished surface shall be maintained for subsequent contract work such as seeding, sodding, mulching or planting.

The sites of all stockpiles shall be graded and maintained for subsequent contract work. Surplus topsoil will become the property of the Contractor.

Roots and top growth of non-native weeds or invasive species that emerge from topsoil stockpiles or after placement of the topsoil shall be eradicated and disposed of in accordance with §610-3.11 Weed Removal immediately upon emergence. Weed removal, treatment and disposal of invasive species will be paid for separately.

B. Topsoil – Reuse On-Site Materials. Topsoil stripping shall be completed prior to starting the general excavation in an area. The Contractor shall take reasonable care that the topsoil is not contaminated during the stripping and other handling operations.

Topsoil identified for reuse that has a known, established population of invasive species shall be treated to eliminate the presence of invasive species per §610-3.11 Weed Removal. The invasive species material shall be disposed appropriately and then the resulting topsoil may be used within the limits. Treatment and disposal of invasive species will be paid for separately.

C. Topsoil – Roadside, Lawn, Special Planting Mix and Acidic. The Contractor shall place topsoil only from approved stockpiles.

D. Topsoil – On-Site Wetland and Wetland Off-Site or Manufactured. The Contractor shall not use topsoil wetlands materials which exhibit the presence of invasive species. Care shall be taken not to impact wetland areas remaining.

On-site wetland topsoil stripping shall be completed prior to starting the general excavation in an area. After stripping, on-site wetland topsoil shall be placed within 24 hours or stored within the contract limits at a location approved by the Engineer.
**610-3.02 Preparation of Subsoil for Turf Establishment.** Prior to establishment of turf in areas that are not to receive topsoil or other permanent erosion control measures, the Contractor shall remove all loose stones and other objects over 2 inches in size to a 4 inch depth. The Contractor shall mix compost with subsoil in accordance with §610-3.07 B. *Turf Establishment With No Topsoil/ On Subsoil* within the areas to be seeded and grade the surface so that the completed work shall conform to the specified finished lines and grades. Compost will be paid for separately.

**610-3.03 Turf Establishment.** The Contractor shall coordinate establishment of turf with other site and construction activities.

The Contractor shall clean all equipment involved in turf establishment to remove plants, seeds and propagules prior to commencement of work. Any work to clean equipment shall be at no additional cost to the State.

The Contractor shall apply the seed mix at one and one half to two times the manufacturer’s recommended rate. Any method of sowing that does not injure the seeds and achieves even coverage in the process of spreading will be acceptable.

The Contractor shall perform the initial watering and shall spread straw uniformly in a continuous blanket to hide the soil from view or mulch Types I – V as specified in the contract documents. Rolled Erosion Control products shall be installed according to manufacturer’s recommendations and paid for separately. Mulch anchorage shall be applied.

The Contractor shall water, mow, and weed the turf establishment areas for the duration of the contract or until turf areas are accepted. Watering, mowing, and weeding to care for the turf will be paid for separately. Any work required to correct initial seeding (installation) shall be done at no additional cost to the State.

**A. Turf Establishment – Roadside.** Areas will be accepted when:

- free from thin or bare ground greater than one foot in diameter;
- at least 80 percent of the ground surface is covered with established specified permanent turf grass species;
- they have had one mowing cycle in accordance with §610-3.12 unless conditions prevent mowing, in which case turf grass shall be an average minimum height of 5 inches; and
- they exhibit healthy green color.

**B. Turf Establishment- Lawns.** Areas will be accepted when:

- free from thin or bare spots greater than six inches in diameter;
- at least 90 percent of the ground surface is covered with established specified permanent turf grass species;
- they have had one mowing cycle in accordance with §610-3.12 unless conditions prevent mowing, in which case turf grass shall be an average minimum height of 3 inches; and
- they exhibit healthy green color.

**610-3.04 Wildflower Seeding.** The Contractor shall clean all equipment involved in wildflower seeding to remove plants, seeds and propagules prior to commencement of work at no additional cost to the State.

The Contractor shall install wildflower seeding materials in accordance with the contract documents. Any method of sowing that does not injure the seeds and provides soil contact in the process of spreading will be acceptable. The Contractor shall apply the seed mix at twice the seed supplier’s recommended rate.

The Contractor shall perform the initial watering and spread straw or mulch Types I – V as specified in the contract documents, uniformly at a rate consistent with seed supplier recommendations. Mulch anchorage is required unless otherwise specified in the contract documents. Wildflower seeding areas
will be accepted after the seeding operation is complete. Any work required to correct initial seeding (installation) shall be done at no additional cost to the State.

The Contractor shall water the wildflower seeding areas for the duration of the contract. Watering to care for the wildflower seeding areas will be paid for separately.

610-3.05 Sod. The Contractor shall generally place sod during the seasons identified in Table 610-1 Sodding Seasons. The Contractor may request extension of seasons, provided the other conditions are met.

<table>
<thead>
<tr>
<th>Geographic locations</th>
<th>Spring</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1 - Essex, Warren (north of towns of Bolton &amp; Warrensburg), R2-Hamilton, Herkimer (towns of Ohio and Webb), R7-Lewis, St. Lawrence, Franklin, Clinton, Jefferson (east of Rte 81)</td>
<td>4/15-6/30</td>
<td>8/15-10/15</td>
</tr>
<tr>
<td>R1 – Greene, Rensselaer, Schenectady, Saratoga, Washington, Albany, Warren (towns of Bolton &amp; Warrenburg &amp; south), R2- Montgomery, Fulton, Oneida, Madison, Herkimer (south of town of Ohio), R3,6,9 – All counties, R7- Jefferson (west of Route 81)</td>
<td>4/1-6/15</td>
<td>8/15-10/31</td>
</tr>
<tr>
<td>R4, 5 &amp; 8- All counties</td>
<td>4/1 – 5/31</td>
<td>8/15 – 10/31</td>
</tr>
<tr>
<td>R10, 11- All counties</td>
<td>3/1-4/30</td>
<td>8/21-11/15</td>
</tr>
</tbody>
</table>

The subgrade of areas to be sodded shall be excavated and firmed to a sufficient depth below the finished grade of the sod to accommodate the tamped or rolled thickness of topsoil and sod. No frozen sod shall be placed nor shall sod be placed on frozen ground surface.

The Contractor shall exercise care to retain the soil existing on the roots of the sod during transporting, handling and transplanting operations.

Sod shall be placed on a minimum of 3 inches of moist topsoil. The topsoil will be paid for separately.

The finished sod soil surface shall be flush with surface of the adjacent soil and adjacent structures. It shall meet the finished grades as shown in the contract documents.

Sod will be accepted when:
- It has been in place a minimum of 60 days after installation,
- It is 95 percent covered with permanent grass species,
- It has had one mowing cycle in accordance with §610-3.12 Mowing,
- It exhibits healthy green color,
- It is free from thin, bare or brown spots greater than 6 inches in diameter, and
- It is firmly rooted in the soil.

Sod not meeting the standards for acceptance, shall be re-sodded until a satisfactory turf has been established, at no additional expense to the State.

The Contractor shall water, mow and weed the sodded areas as necessary until contract final acceptance. These items will be paid for separately.

610-3.06 Soil Amendments. The Contractor shall place, apply or incorporate fertilizer, limestone, mycorrhizal fungi, sulfur and/or moisture retention additive where shown in the contract documents.

When mycorrhizal fungi are specified, application rates for turf shall ensure an even distribution of 100,000 propagules minimum per acre for drill seeding and 1,000,000 propagules minimum per acre for hydroseeding. Application rates for planting and Tree Root Zone Treatment, as well as any other aspects of distributing and/or incorporating mycorrhizal fungi, shall be in accordance with the manufacturer’s recommendations.
LANDSCAPE DEVELOPMENT

All other amendments shall be mixed with topsoil prior to placing, spread evenly over the surface of turf, wildflower or sod areas, applied within shrub saucers or applied over the plant beds as appropriate, at the rates recommended by the manufacturer or as specified in the contract documents. The method of application shall ensure an even distribution. When hydraulic application is used, the minimum rate of water application shall be in accordance with manufacturer’s recommendation.

Trees shall be fertilized using Method No. 1, No. 2 or No. 3 in accordance with the contract documents.

A. Method No. 1. Holes shall be made in the earth about 18 inches deep and 18 inches apart, and located in the outer two-thirds (as measured on the radius) of the circular area lying under the limits of the tree branches. The holes shall be made with a crowbar, soil auger, pneumatic equipment or other approved tools and care shall be taken to avoid injury to the roots. Fertilizer shall be applied at the rate specified; placing equal amounts of fertilizer in the lower 12 inches of each hole.

B. Method No. 2. Fertilizer shall be applied to soil’s surface hydraulically at the rate specified with sufficient water to saturate the soil for the area and depth of the tree roots without creating air pockets.

C. Method No. 3. Fertilizer rate and method of application shall be as specified in the contract documents.

610-3.07 Compost.

A. Existing Soil: The Contractor shall spread 2 inches of Compost Type A or E within the limits shown in the contract documents and tilled into existing soil to a total depth of six inches.

B. Turf Establishment With No Topsoil/ On Subsoil. The Contractor shall spread 2 inches of Compost Type A, D or E within the limits shown in the contract documents and tilled into subsoil to a minimum depth of four inches.

C. Turf Establishment With Topsoil. The Contractor shall mix Compost Type A, D or E with topsoil as specified in the contract documents.

D. Plant Pits or Beds: Compost Type A, D or E shall be applied at a ratio of 1 part compost to 5 parts existing soil.

610-3.08 Mulch for Planting. The Contractor shall apply mulch consisting of wood chips, pine nuggets or shredded bark to the surface of the beds and tree pit areas in accordance with the contract documents. The Contractor shall apply mulch to a uniform depth of 3 inches over the shrub bed and tree pit areas and 2 inches over groundcover beds. The mulch shall be distributed so as to create a smooth, level cover over the exposed soil. Mulch shall not cover plants or be in contact with tree root flare, tree trunks, and plant stems.

610-3.09 Permeable Weed Control Landscape Fabric. Areas where landscape fabric is to be installed shall be smooth, firm, stable and free of rocks, clods, foliage, roots, trash, debris or other material that will prevent the matting from lying in direct contact with the soil surface.

The landscape fabric shall be placed where shown in the contract documents and as required by the manufacturer.

610-3.10 Watering Vegetation. The Contractor shall provide water without damage to plants, mulch, stakes, plant saucers, sod or other areas to be watered. Damage resulting from watering operations shall be repaired at no additional cost to the State.
Watering shall be applied in accordance with §610-3.03 Turf Establishment, §610-3.04 Wildflower Seeding, §610-3.05 Sod or §611-3.01 General. Watering for existing vegetation shall be as specified in the contract documents.

Watering shall be applied at the following rates:

**A. Turf, Wildflowers, Sod, Planting Beds.** In the absence of 1 inch of rainfall within 5 consecutive calendar days the Contractor shall water all turf, wildflowers, sod and planting beds once a week to a depth of 1 inch.

**B. Trees and Planting Pits.** Between April 1st and November 15th, in the absence of 1 inch of rainfall within 5 consecutive calendar days, the Contractor shall apply water to trees and planting pits once per week, except during July and August, when water shall be applied twice per week, with a minimum of 2 days between applications. Soil saucers or portable drip irrigation systems shall be filled once per watering.

**610-3.11 Weed Removal.** The Contractor shall perform weed removal in accordance with the contract documents. The Contractor shall remove and dispose of weeds including roots prior to flowering and seed formation by manual, chemical or mechanical means. Any method of weed removal that leaves live roots in the soil will not be permitted. An appropriately licensed applicator is required for chemical weed control methods. The Contractor shall ensure the preservation of desirable vegetation. Treatment and removal of invasive species will be paid for separately.

**610-3.12 Mowing.** The schedule may be modified to accommodate prevailing or forecast weather conditions. The Contractor shall be responsible, prior to each mowing, for the removal and disposal of any debris and litter which has accumulated since the last mowing. Care shall be taken to avoid damage to existing plant materials.

**A. Roadside.** The Contractor shall mow all turf establishment areas to a height of 5 inches whenever growth reaches 8 inches for the duration of the contract. Clippings shall be left in place.

**B. Lawns.** The Contractor shall mow all turf establishment areas to a height of 3 inches after initial growth reaches 5 inches, and then mowed to a height of 3 inches whenever a 5 inch height is reached thereafter for the duration of the contract. Clippings shall be mulched in place.

**C. Sod.** The Contractor shall mow all sodded areas to a height of 3 inches after initial growth reaches 5 inches, and then mowed to a height of 3 inches whenever a 5 inch height is reached thereafter for the duration of the contract. Clippings shall be mulched in place.

**610-3.13 Mowing Limits Markers.** The Contractor shall install mowing limit markers plumb to a depth in accordance with the manufacturer’s instruction.

**610-4 METHOD OF MEASUREMENT**

**610-4.01 Topsoil.** The quantity to be measured for payment will be in cubic yards of each type of topsoil measured to the nearest whole cubic yard of topsoil placed, from payment lines shown in the contract documents.

Cross sectioning, for the purpose of determining quantities for payment, will be employed only where payment lines are not shown on the Plans and cannot be reasonably established by the Engineer.

**610-4.02 Preparation of Subsoil for Turf Establishment.** The quantity to be measured for payment will be in square yards on slope to the nearest whole square yard of subsoil area prepared for turf establishment.
**LANDSCAPE DEVELOPMENT**

**610-4.03 Turf Establishment.** The quantity to be measured for payment will be in square yards on slope to the nearest whole square yard of turf established.

**610-4.04 Wildflower Seeding.** The quantity to be measured for payment will be in square yards on slope to the nearest whole square yard of wildflower seeding.

**610-4.05 Sod.** The quantity to be measured for payment will be in square yards on slope to the nearest whole square yard of sod placed.

**610-4.06 Soil Amendments.** The quantity to be measured for payment will be in pounds to the nearest whole pound or in gallons to the nearest whole gallon of soil amendments (fertilizer, limestone, mycorrhizal fungi, sulfur and/or moisture retention additive) applied.

**610-4.07 Compost.** The quantity to be measured for payment will be in cubic yards to the nearest whole cubic yard of compost placed or incorporated.

**610-4.08 Mulch for Planting.** The quantity to be measured for payment will be in cubic yards to the nearest whole cubic yard of mulch placed.

**610-4.09 Permeable Weed Control Landscape Fabric.** The quantity to be measured for payment will be in square yards on slope to the nearest whole square yard.

**610-4.10 Watering Vegetation.** The quantity to be measured for payment will be in 1000 gallons (MGal) to the nearest MGal of water applied, determined from approved measuring devices, or by measurement in tanks or containers of known capacity.

**610-4.11 Weed Removal.** The quantity to be measured for payment will be in square yards on slope weeded per occurrence to the nearest whole square yard.

**610-4.12 Mowing.** The quantity to be measured for payment will be the number of square yards on slope mowed per occurrence to the nearest whole square yard.

**610-4.13 Mowing Limits Markers.** The quantity to be measured for payment will be by the number of complete markers satisfactorily installed.

**610-5 BASIS OF PAYMENT**

**610-5.01 Topsoil.** The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work, including the handling, storing, stockpiling, and placement.

**610-5.02 Preparation of Subsoil for Turf Establishment.** The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

**610-5.03 Turf Establishment.** The unit price bid shall include the cost of all labor, materials and equipment including initial water, mulch and mulch anchorage as necessary to satisfactorily complete the work.

**610-5.04 Wildflower Seeding.** The unit price bid shall include the cost of all labor, materials and equipment including initial water, mulch and mulch anchorage necessary to satisfactorily complete the work.
LANDSCAPE DEVELOPMENT

610-5.05 Sod. The unit price bid shall include the cost of all labor, materials and equipment including initial water, necessary to complete the work. Topsoil bed placed under the sod shall be paid for separately.

610-5.06 Soil Amendments. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work, including water for hydraulic application.

610-5.07 Compost. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

610-5.08 Mulch for Planting. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

610-5.09 Permeable Weed Control Landscape Fabric. The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

610-5.10 Watering Vegetation. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

610-5.11 Weed Removal. The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

610-5.12 Mowing. The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

610-5.13 Mowing Limits Markers. The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>610.0501</td>
<td>Fertilizer</td>
<td>Pound</td>
</tr>
<tr>
<td>610.0502</td>
<td>Fertilizer</td>
<td>Gallon</td>
</tr>
<tr>
<td>610.06</td>
<td>Limestone</td>
<td>Pound</td>
</tr>
<tr>
<td>610.0701</td>
<td>Mycorrhizal Fungi</td>
<td>Pound</td>
</tr>
<tr>
<td>610.0702</td>
<td>Mycorrhizal Fungi</td>
<td>Gallon</td>
</tr>
<tr>
<td>610.08</td>
<td>Moisture Retention Additive</td>
<td>Pound</td>
</tr>
<tr>
<td>610.0901</td>
<td>Sulfur</td>
<td>Pound</td>
</tr>
<tr>
<td>610.0902</td>
<td>Sulfur</td>
<td>Gallon</td>
</tr>
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<td>610.10</td>
<td>Compost</td>
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<tr>
<td>610.1101</td>
<td>Mulch for Planting Type A, B &amp; D – Wood Chips and Shredded Bark</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>610.1102</td>
<td>Mulch for Planting Type C – USDA-APHIS Protocol Wood Chips</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>610.1103</td>
<td>Mulch for Planting Type E – Pine Nugget</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>610.1201</td>
<td>Permeable Weed Control Landscape Fabric</td>
<td>Square Yard</td>
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<td>610.1202</td>
<td>Permeable Weed Control Landscape Fabric with Herbicide</td>
<td>Square Yard</td>
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<td>610.13</td>
<td>Weed Removal</td>
<td>Square Yard</td>
</tr>
<tr>
<td>610.1401</td>
<td>Topsoil – Reuse On-Site Materials</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>610.1402</td>
<td>Topsoil - Roadside</td>
<td>Cubic Yard</td>
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<tr>
<td>610.1403</td>
<td>Topsoil - Lawns</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>610.1404</td>
<td>Topsoil - Special Planting Mix</td>
<td>Cubic Yard</td>
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<tr>
<td>610.1405</td>
<td>Topsoil – Acidic</td>
<td>Cubic Yard</td>
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<tr>
<td>610.1406</td>
<td>Topsoil – On-Site Wetland Materials</td>
<td>Cubic Yard</td>
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<tr>
<td>610.1407</td>
<td>Topsoil – Wetland Materials</td>
<td>Cubic Yard</td>
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<tr>
<td>610.15</td>
<td>Preparation of Subsoil for Turf Establishment</td>
<td>Square Yard</td>
</tr>
</tbody>
</table>
SECTION 611 – PLANTING, TRANSPLANTING AND POST PLANTING CARE

611-1 DESCRIPTION.

611-1.01 General. Vacant

611-1.02 Planting. This work consists of furnishing, and planting trees, shrubs, vines, groundcovers and other plants in accordance with the contract documents and as directed by the Engineer.

611-1.03 Transplanting. This work consists of transplanting existing plants from existing locations to new locations in accordance with the contract documents and as directed by the Engineer.

611-1.04 Portable Drip Irrigation System. This work shall consist of furnishing, delivering, placing and removing Portable Drip Irrigation System (PDIS) for watering around newly planted trees and other vegetation in accordance with the contract documents and as directed by the Engineer.

611-1.05 Post-Planting Care. This work consists of the care of newly planted and transplanted trees, shrubs, vines, groundcovers and other plants in accordance with the contract documents and as directed by the Engineer.

611-1.06 Rodent Guards. This work shall consist of furnishing, delivering and placing rodent guards around newly planted trees and other vegetation in accordance with the contract documents and as directed by the Engineer.

611-2 MATERIALS

611-2.01 General. Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>712-01</td>
</tr>
<tr>
<td>Topsoil</td>
<td>713-01</td>
</tr>
<tr>
<td>Mulch for Landscape Bedding</td>
<td>713-05</td>
</tr>
<tr>
<td>Materials for the Protection of Plants</td>
<td>713-08</td>
</tr>
<tr>
<td>Compost</td>
<td>713-15</td>
</tr>
</tbody>
</table>

611-2.02 Planting. Trees, shrubs, vines, groundcovers and other plants shall be as specified under '713-06 and as further specified in the contract documents.

611-2.03 Transplanting. Plants shall be existing plants in accordance with '713-06.

611-2.04 Portable Drip Irrigation System. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing. Materials may be new or previously used that meet the following material requirements.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials for the Protection of Plants</td>
<td>713-08</td>
</tr>
</tbody>
</table>
LANSCAPE DEVELOPMENT

611-2.05 Post Planting Care. Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Pesticides 713-13

611-2.06 Rodent Guards. Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Materials for the Protection of Plants 713-08

611-3 CONSTRUCTION

611-3.01 General. Locations for plants shall be as specified in the contract documents. All plants for planting and transplanting shall be protected from damage and drying out, including during transportation, handling or while in temporary storage. No planting or transplanting shall be done when the soil is frozen, saturated (except in wetland conditions) or otherwise in an unsatisfactory condition for working. Planting seasons represent average times of suitable conditions between weather extremes. In general, planting or transplanting shall occur during these seasons. The Contractor may request an extension of the planting seasons.

<table>
<thead>
<tr>
<th>TABLE 611-1 PLANTING SEASONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geographic locations</strong></td>
</tr>
<tr>
<td>(NYSDOT Regions and Counties)</td>
</tr>
<tr>
<td>(USDA 3b-4a)</td>
</tr>
<tr>
<td>R2-Hamilton, Herkimer (towns of Ohio &amp; Webb)</td>
</tr>
<tr>
<td>R7-Lewis, St. Lawrence, Franklin, Clinton, Jefferson (east of Route 81)</td>
</tr>
<tr>
<td>(USDA 4a-5a)</td>
</tr>
<tr>
<td>R2- Montgomery, Fulton, Oneida, Madison, Herkimer (south of town of Ohio)</td>
</tr>
<tr>
<td>R3,6,9 – All counties</td>
</tr>
<tr>
<td>R7- Jefferson (west of Route 81)</td>
</tr>
<tr>
<td>(USDA 5a-6a)</td>
</tr>
<tr>
<td>(USDA 6b-7a)</td>
</tr>
<tr>
<td>All Locations</td>
</tr>
</tbody>
</table>
Locations for plants and outlines of areas to be planted shall be staked or marked out on the ground by the Contractor and approved by the Engineer before any plant pits or plant beds are dug. Where non-movable underground obstructions are encountered, the plant pits shall be relocated as approved by the Engineer.

Existing vegetation shall be removed from all new planting beds.

Where an impervious layer of soil (hardpan, fragipan and soils with greater than 20% clay content) is encountered during the excavation of plant pits or beds, all such soil shall be removed up to a depth of one foot beyond required plant pit depth in order to provide adequate drainage for the plant. The pits or beds shall be backfilled with topsoil. Any additional excavation required to properly plant or transplant in impervious soils will be considered extra work.

Planting soil shall be unamended existing soil excavated from the plant pit unless otherwise specified. Watering shall accompany backfilling of plant. The Contractor shall perform the initial watering for backfilling plant so that no voids occur in the plant pit.

No tree shall be staked, guyed or anchored unless otherwise specified in the contract documents.

Mulch shall Type A or B unless otherwise specified in the contract documents and shall be placed at the time of planting or transplanting.

The Contractor shall water, weed and maintain mulch at no cost to the state until the newly planted or transplanted material is accepted.

Plants will be accepted when all specified plants meet the following conditions:

- Species has been verified and plant is in its designated location
- Planted or transplanted in accordance with ANSI A 300, Part 1, 2, 3 and 6 Standard Practices
- Planted or transplanted in accordance with 611 Standard sheets
- living, healthy, unimpaired and in an undamaged condition

Watering, if specified, shall begin upon acceptance of the planting or transplanting and unless otherwise specified continue for one year or the duration of the contract, whichever is later. Watering after acceptance shall be performed as required in Section 610-3.09 Watering Vegetation and paid for separately. Installation of rodent guards if specified are paid for separately.

Plants that die after acceptance at any time during the contract duration shall be removed and unless otherwise specified, the surface area shall be restored to the condition of the adjacent surface at no additional cost to the state.

### 611-3.02 Planting

The Contractor shall notify the Engineer at least four calendar days before intended delivery of plants or planting materials to the site. The Contractor shall furnish the Engineer legible copies of the certificates of inspection of plant materials and documentation for each shipment showing point of origin, sizes, scientific names, quantities, and kinds of materials supplied.

Planting shall be in accordance with ANSI A300 Part 1, 2 and 3 Standard Practices.

Pruning at the time of planting shall be limited to the removal of dead, conflicting and broken branches; and to other pruning consistent with good horticultural practice in accordance with ANSI A300 Part 1 Standard Practices.

### 611-3.03 Transplanting

Transplanting shall be in accordance with ANSI A300 Part 1, 2, 3 and 6 Standard Practices and accomplished by a digging method intended to preserve the root system intact to the extent practicable. Planting soil shall be unamended existing soil excavated from the plant pit unless otherwise specified. Transplanted stock shall be pruned prior to transplanting in accordance with ANSI A300 Part 1 Standard Practices.

The Contractor shall take appropriate measures to avoid damage to plant during the transplanting operation including:

1. Provide trunk and branch Protection.
2. Treat plant with an anti-desiccant prior to being dug up
3. Protect all roots from drying out.
4. Prune damaged plant roots greater than 1 inch in diameter
Plants shall be set in a vertical position.
Where the contract duration allows plants greater than 6 inch DBH shall be root pruned up to one year prior to transplanting.

611-3.04 Portable Drip Irrigation System (PDIS). After the requirements for planting under Section 611 Planting, Transplanting and Post Planting Care are completed; the Contractor shall supply and install the required number and size of PDIS as recommended by the manufacturer for the trees planted. Watering shall be performed as required in Section 610-3.09 Watering Vegetation and paid for separately. All PDIS that are damaged and or missing shall be replaced at no added cost to the State.

The Contractor shall remove PDIS in the fall prior to the first frost. The PDIS shall remain the property of the Contractor.

611-3.05 Post-Planting Care. If specified, the Contractor shall care for planting as needed for one year following the satisfactory completion of all of the planting and/or transplanting or for the duration of the contract, which ever is later. The contractor shall prepare and submit a post-planting care work schedule for approval.

Post-planting care shall consist of:
1. Mulching – with materials to match those used in initial planting, twice to maintain a depth of 3 inches.
2. Weeding - twice
3. Integrated vegetation and pest management- in the event of threat of serious damage from insects or diseases the plants shall be treated by preventative or remedial measures.
4. Pruning (ANSI A300 Part 1) - once to prune dead or damaged branches.
5. Maintenance/Replacement/of tree support system if present – once every six months
6. Removal of tree support system if present at the end of the post-planting care period.
7. Removal of rodent guards if present at the end of the post-planting care period

611-3.06 Rodent Guards. Vacant

611-4 METHOD OF MEASUREMENT.

611-4.01 Planting. The quantity to be measured for payment will be the number of plants placed.

611-4.02 Transplanting. The quantity to be measured for payment will be the number of plants placed.

611-4.03 Portable Drip Irrigation System (PDIS). The quantity of PDIS to be measured for payment will be the number of PDIS placed.

The quantity of Removal of Portable Drip Irrigation System to be measured for payment will be the number of PDIS removed.

611-4.04 Post-Planting Care. The quantity to be measured for payment will be the number of plants cared for or nearest whole square yard on slope of plants cared for.

611-4.05 Rodent Guards. The quantity to be measured for payment will be the number of rodent guards placed.

611-5 BASIS OF PAYMENT.

611-5.01 Planting. The unit price bid for each plant shall include the cost of all labor, materials, and equipment, including initial watering and mulch, compost, plants and plant protection materials and topsoil necessary to satisfactorily complete the work.
LANDSCAPE DEVELOPMENT

611-5.02 Transplanting. The unit price bid for each plant shall include the cost of all labor, materials, and equipment, including initial watering, mulch, compost, plant and plant protection materials and topsoil necessary to satisfactorily complete the work.

611-5.03 Portable Drip Irrigation System. The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

611-5.04 Post-Planting Care. The unit price bid for each plant shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work. Progress payments for work satisfactorily performed may be paid at the mid point of the post-planting care in amounts not to exceed forty percent (40%) of the unit price bid for the respective work.

611-5.05 Rodent Guards. The unit price bid shall include the cost of all labor, materials, and equipment, necessary to satisfactorily complete the work.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>611.011x</td>
<td>Planting - Major Deciduous Trees – size as specified</td>
<td>Each</td>
</tr>
<tr>
<td>611.012x</td>
<td>Planting - Major Deciduous Trees – 1 ¼ inch Caliper</td>
<td>Each</td>
</tr>
<tr>
<td>611.013x</td>
<td>Planting - Major Deciduous Trees – 1 ½ inch Caliper</td>
<td>Each</td>
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<td>611.014x</td>
<td>Planting - Major Deciduous Trees – 1 ¾ inch Caliper</td>
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<td>Planting - Major Deciduous Trees – 2 inch Caliper</td>
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<td>611.016x</td>
<td>Planting - Major Deciduous Trees – 2 ½ inch Caliper</td>
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<td>Planting - Major Deciduous Trees – 3 inch Caliper</td>
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<td>611.018x</td>
<td>Planting - Major Deciduous Trees – 3 ½ inch Caliper</td>
<td>Each</td>
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<td>Planting - Major Deciduous Trees – 4 inch Caliper</td>
<td>Each</td>
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LANDSCAPE DEVELOPMENT

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<tr>
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<td>Ball &amp; Burlap, Field Potted or Field Boxed</td>
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<tr>
<td>2</td>
<td>Container or Box Grown</td>
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</tr>
<tr>
<td>3</td>
<td>Bare Root</td>
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<tr>
<td>4</td>
<td>In Ground Fabric Bag Grown</td>
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<td>Planting – Vines, Groundcovers – Number SP3 Container</td>
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<td>Planting – Vines, Groundcovers – Number SP4 Container</td>
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<td>y</td>
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<tr>
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<td>Container Grown</td>
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<td>Field Potted</td>
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<td>Transplanting, over ¾ inch to 3 inches Diameter at Breast Height</td>
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<td>611.13</td>
<td>Transplanting, over 3 inches to 6 inches Diameter at Breast Height</td>
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<td>611.14</td>
<td>Transplanting over 6 inches to 12 inches Diameter at Breast Height</td>
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<td>Transplanting Vines, Groundcovers,</td>
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<td>611.16</td>
<td>Transplanting Herbaceous Plants</td>
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<td>611.17</td>
<td>Portable Drip Irrigation System</td>
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<td>Removal of Portable Drip Irrigation System</td>
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<td>611.19</td>
<td>Post-Planting Care</td>
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<tr>
<td>611.21</td>
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</tbody>
</table>

Refer to the Contract Proposal for full item number and full description

SECTION 612 – (VACANT)

SECTION 613 (VACANT)

SECTION 614 - PRUNING, IMPROVING AND REMOVING EXISTING VEGETATION
614-1 DESCRIPTION.

614-1.01 Pruning Existing Trees. This work shall consist of pruning existing trees as shown in the contract documents and as directed by the Engineer.

614-1.02 Improvement of Vegetated Areas. This work shall consist of cutting, disposing of all wood and debris, stump removal, or mechanical or chemical treatment of specified trees and woody vegetation within the area shown in the contract documents and as directed by the Engineer.

614-1.03 Tree Removal. The work shall consist of felling trees over 4 inch in diameter at breast height, disposing of all wood and debris, and may require topping, stump removal and other work as shown in the contract documents and as directed by the Engineer.

614-1.04 Existing Stump Removal. The work shall consist of removing existing stumps, disposing of all wood and debris, as shown in the contract documents and as directed by the Engineer.

614-1.05 Tree Root Zone Treatment (Vertical Mulching/Aeration). This work shall consist of treating the root zone of trees through aeration and/or mulching of the roots as shown in the contract documents and as directed by the Engineer.

614-1.06 Tree Root Pruning. This work shall consist of cleanly pruning, existing tree roots severed during construction operations, typically related to linear excavation, as shown in the contract documents and as directed by the Engineer.

614-2 MATERIALS

614-2.01 Pruning Existing Trees. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Water 712-01

614-2.02 Improvement of Vegetated Areas. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Topsoil 713-01
- Pesticides 713-13

614-2.03 Tree Removal. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Topsoil 713-01

614-2.04 Existing Stump Removal. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Topsoil 713-01

614-2.05 Tree Root Zone Treatment (Vertical Mulching/Aeration). The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Mortar Sand 703-03
- Mycorrhizal Fungi 713-09
- Compost 713-15

614-2.06 Tree Root Pruning. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Water 712-01
614-3 CONSTRUCTION DETAILS

614-3.01 Pruning Existing Trees

A. Equipment. Workers shall employ accepted tree climbing methods, and shall not climb trees with climbing spurs. All tools used and methods employed in accordance ANSI A300 Part 1 Standard Practices, except that no anvil type pruners will be permitted. The cutting surfaces of all tools, ladders, ropes, soles of workers shoes and other objects coming into contact with the tree shall be disinfected with a 2% bleach solution and dried completely prior to the start of any work on a tree to prevent the spread of plant diseases.

B. Pruning. Pruning shall be in accordance ANSI A300 Part 1 Standard Practices. When specified the quantity of trees as shown in the contract documents shall be pruned so the resulting crown retains the growth habit of the tree species. Any and all branches interfering with or hindering the healthy growth of the tree shall be removed. All diseased branches and all dead branches 1 inch or more in diameter shall be removed. Any branch which may be partly dead, yet has a healthy lateral branch at least one-third the diameter of the parent branch shall be removed beyond the healthy branch. All stubs or improper cuts resulting from former pruning shall be removed. All cuts shall be cleanly made with sharp tools as close to the parent trunk or limb as possible without disturbing the branch bark ridge or callus collar. All existing nails, spikes, wire, plastic or other materials found driven into or fastened to the trunk or branches shall be removed or if approved they shall be cut flush in a manner to permit complete healing over.

614-3.02 Improvement of Vegetated Areas. All trees and shrubs specified for removal will be designated by the Engineer either by separate marking, marking in sample areas, or otherwise. Unless otherwise specified, all stumps shall be cut to a height of about 6 inches above the ground. Unless otherwise specified, an approved herbicide shall be applied to all live stumps in accordance with the manufacturer’s recommendations. An approved dye shall be added to the herbicide mixture to identify treated stumps and stubble. Where stump removal is specified, all stump holes shall be backfilled with topsoil, unless otherwise specified in the contract documents, and backfill shall be compacted. Unless otherwise specified in the contract documents, grass shall be established on stump holes and will be paid for separately.

All wood, stumps, brush and other debris resulting from the work shall be disposed of as specified in Section 201 Clearing and Grubbing.

614-3.03 Tree Removal. No tree shown in the contract documents or listed for removal shall be cut until it is approved by the Engineer. The contractor shall be responsible to coordinate all work involving utilities with the respective utility company. All trees shall be topped and limbed before felling unless otherwise approved. All injuries to the limbs, bark and roots of such plants shall be repaired in accordance with ANSI A300 Part 1 Standard Practices Pruning and ANSI Z133.1 Arboricultural Operations Safety.

The Contractor shall field measure all trees at 4 ½ feet above the ground, commonly referred to as Diameter Breast Height (DBH) before they are cut.

Stumps of trees removed under this item for removal shall be grubbed, cut, ground to the depth of six inches below grade or as specified in the contract documents. All stump holes shall be backfilled with topsoil, unless otherwise specified in the contract documents and backfill shall be compacted. Unless
otherwise specified in the contract documents, grass shall be established on stump holes and will be paid for separately.

614-3.04 Existing Stump Removal. Existing stumps listed for removal in the contract documents shall be ground to the depth of 6 inches below grade unless otherwise specified in the contract documents. Stumps shall include all visible wood and roots. Backfill to finished grade with topsoil, unless otherwise specified in the contract documents. The backfill shall be compacted. Unless otherwise specified in the contract documents, grass shall be established on stump holes and will be paid for separately.

614-3.05 Tree Root Zone Treatment (Vertical Mulching/Aeration). Locations of work shall include areas within the dripline or wider root zone of existing trees to be preserved as shown on the contract documents.

Appropriate drilling tools shall be used for drilling of holes for root zone restoration. Drilling equipment shall be hand held or light weight devices (no heavy machinery) so as to avoid further impact to tree roots through compaction.

Holes shall be drilled and existing soil removed within a zone beginning 3 feet from the trunk of the specified tree and extending to its dripline on an approximately 2 foot x 2 foot grid. Dimensions of holes or drill size shall be approximately 2 inches in diameter and a minimum of 12 inches deep. Efforts should be made to minimize drilling through large tree roots (especially near the trunk). When woody roots are encountered, the drill hole shall be moved to avoid root damage.

The hole shall be completely filled to original grade as follows:
- Method 1: with mortar sand
- Method 2: with mortar sand amended with Mycorrhizal Fungi.
- Method 3: with compost.
- Method 4: with compost amended with Mycorrhizal Fungi.

When mycorrhizal fungi are specified, they shall be a dry granular powder specifically designed for vertical mulching applications. Apply in accordance with the manufacturer’s recommendations at a rate of 3 ounces per hole or when pre-mixed in bulk 5 pounds per cubic yard of sand or compost.

614-3.06 Tree Root Pruning. Existing tree roots greater than 1 inch in diameter, measured at the edge of excavation, shall be pruned within 24 hours of the time they have been damaged by construction activity. The severed root shall be pruned at the edge of excavation, or 1 inch beyond the entire damaged portion of the tree root if damaged root extends beyond the edge of excavation into undisturbed soil. Pruning shall be in accordance with ANSI A300 Part 1 Standard Practices Pruning and ANSI Z133.1 Arboricultural Operations Safety. All cuts shall be cleanly made with sharp tools. The cutting surfaces of all tools, ladders, ropes, soles of workers shoes and other objects coming into contact with the tree roots shall be washed with a disinfectant at the start of any work on a tree to prevent the spread of plant diseases.

The excavated area around the existing tree roots shall be backfilled as soon as construction activities permit with the specified or approved materials. If the excavated area around the existing tree roots is not backfilled within 24 hours, all roots shall be kept moist, to prevent dessication.

614-4 METHOD OF MEASUREMENT

614-4.01 Pruning Existing Trees. The quantity to be measured for payment will be the number of trees pruned.

614-4.02 Improvement of Vegetated Areas. The quantity to be measured for payment will be in square yards measured to the nearest whole square yard of area improved.

614-4.03 Tree Removal. The quantity to be measured for payment will be the number of trees, including their stumps if specified.
614-4.04 **Pre-Existing Stump Removal.** The quantity to be measured for payment will be the number of pre-existing stumps removed.

614-4.05 **Tree Root Zone Treatment (Vertical Mulching/Aeration).** The quantity to be measured for payment will be in square yards treated within the zone, measured to the nearest square yard.

614-4.06 **Tree Root Pruning.** The quantity to be measured for payment will be in feet to the nearest whole foot, along excavation line.

614-5 **BASIS OF PAYMENT**

614-5.01 **Pruning Existing Trees.** The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

614-5.02 **Improvement of Vegetated Areas.** The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

614-5.03 **Tree Removal.** The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

When trees are specified in the contract documents for removal, payment for each tree removal will include removal of the stump.

614-5.04 **Existing Stump Removal.** The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

614-5.05 **Tree Root Zone Treatment.** The unit price bid shall include the cost of labor, materials, equipment and incidentals necessary to complete the work. Mycorrhizal Fungi and mulch will be paid for separately.

614-5.06 **Tree Root Pruning.** The unit price bid shall include the cost of labor, materials, equipment and incidentals necessary to complete the work.

Payment will be made under:

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<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
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<td>Care of Trees Over 12” to 24” Diam. at Breast Height - Pruning</td>
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<td>614.0431</td>
<td>Care of Trees Over 24” to 36” Diam. at Breast Height - Pruning</td>
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</tr>
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</tr>
<tr>
<td>614.0608nn</td>
<td>Tree Removal Over 60” to 72” at Breast Height</td>
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</tr>
</tbody>
</table>

**nn = Stump Treatment**

01 = Stumps Cut to Above Grade, 02 = Stumps Cut Flush,
LANDSCAPE DEVELOPMENT

03 = Stumps Cut to Below Grade, 04 = Stumps Grubbed

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Measurement Unit</th>
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<td>614.0703</td>
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<td>614.08</td>
<td>Tree Root Zone Treatment (Vertical Mulching/Aeration)</td>
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<tr>
<td>614.09</td>
<td>Tree Root Pruning</td>
<td>Feet</td>
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</table>

SECTION 615 LANDSCAPE APPURTENANCES

615-1 DESCRIPTION. The work in this section shall include all work required for furnishing, placing, and/or special construction of landscape appurtenances.

615-2 MATERIALS. As specified in the special specifications.

615-3 CONSTRUCTION DETAILS. As specified in the special specifications.

615-4 METHOD OF MEASUREMENT. As specified in the special specifications.

615-5 BASIS OF PAYMENT. As specified in the special specifications.
Make the following changes to the Standard Specifications dated May 1, 2008. Pages 893 to 906, Delete Section 713 in its entirety and Replace it with the following:

SECTION 713 - LANDSCAPE DEVELOPMENT MATERIALS

713-01 TOPSOIL

SCOPE. This specification covers the material requirements for topsoil for use in turf establishment, wildflower seeding, sodding, and planting.

MATERIAL REQUIREMENTS. Topsoil may be naturally occurring or may be manufactured. If naturally occurring topsoil exists on the site it shall be the surface layer of soil at a depth specified in the contract documents or approved by the engineer. Manufactured topsoil is a mixture of materials comprised of a mineral(soil) component that by itself does not exhibit the properties and characteristics of topsoil, an organic material component consisting of compost(s) meeting the requirements of §713-15 Compost, and amendment(s), such as limestone meeting the requirements of §713-02 Limestone that, when combined together, meet the requirements for topsoil. For manufactured topsoil the contractor shall thoroughly mix the organic portion with the granular portion under dry conditions.

Topsoil shall be free from refuse, material toxic or otherwise deleterious to plant growth, subsoil, sod clumps, seeds or other viable propagules of invasive plants, woody vegetation and stumps, roots, brush, refuse, stones, clay lumps, or similar objects. Construction and demolition debris as classified under 6 NYCRR Part 360, other than uncontaminated land clearing debris, shall not be used to manufacture or amend topsoil. Sod and herbaceous growth such as grass and non-invasive weeds need not be removed but shall be thoroughly broken up and mixed with the soil during handling or manufacturing operations.

A. Topsoil-Reuse of On-Site Materials. Existing topsoil stripped and reclaimed in accordance with Section 203 Excavation and Embankment taken from sites within the contract limits. The general limits and depth of the material to be utilized for topsoil will be indicated in the Contract documents. Where no depth is indicated it shall be 6 inches. Topsoil shall be stored on site. Based on visual inspection by the Engineer, topsoil may require screening to meet this requirement.

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<tr>
<td>1 inch</td>
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B. Manufactured or Offsite Materials.

1. Topsoil -Roadside
   - The pH of the material shall be between 5.5 and 7.6.
   - The organic content shall be not less than 3% or more than 8%

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 inch</td>
<td>100</td>
</tr>
<tr>
<td>1 inch</td>
<td>85 to 100</td>
</tr>
<tr>
<td>1/4 inch</td>
<td>65 to 100</td>
</tr>
<tr>
<td>No. 200</td>
<td>20 to 65</td>
</tr>
<tr>
<td>2 Micron</td>
<td>0 to 20</td>
</tr>
</tbody>
</table>

2. Topsoil -Lawn
   - The pH of the material shall be between 5.5 and 7.6.
LANDSCAPE DEVELOPMENT MATERIALS

The organic content shall be not less than 6% or more than 12%.

Gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 10</td>
<td>90 to 100</td>
</tr>
<tr>
<td>No. 40</td>
<td>45 to 80</td>
</tr>
<tr>
<td>No. 200</td>
<td>25 to 70</td>
</tr>
<tr>
<td>2 Micron</td>
<td>5 to 35</td>
</tr>
</tbody>
</table>

3. Topsoil - Special Planting Mix

- The pH of the material shall be between 5.5 and 7.0.
- The organic content shall be not less than 10% or more than 15%.

Gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 inch</td>
<td>100</td>
</tr>
<tr>
<td>1 inch</td>
<td>85 to 100</td>
</tr>
<tr>
<td>1/4 inch</td>
<td>65 to 100</td>
</tr>
<tr>
<td>No. 200</td>
<td>20 to 40</td>
</tr>
<tr>
<td>2 Micron</td>
<td>5 to 35</td>
</tr>
</tbody>
</table>

4. Topsoil - Acidic

- The pH of the material shall be between 4.8 and 6.0.
- The organic content shall be not less than 6% or more than 15%.

Gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 10</td>
<td>90 to 100</td>
</tr>
<tr>
<td>No. 40</td>
<td>25 to 70</td>
</tr>
<tr>
<td>No. 200</td>
<td>5 to 10</td>
</tr>
<tr>
<td>2 Micron</td>
<td>5 to 35</td>
</tr>
</tbody>
</table>

C. Topsoil - Wetland

1. Topsoil - On-Site Wetland Materials. Existing wetland soil stripped and reclaimed from existing impacted delineated wetlands sites in accordance Section 203 Excavation and Embankment taken from within the contract limits and to the depth specified in the contract documents. This wetland soil shall be exempt from the Sampling & Testing requirements.

2. Topsoil - Offsite or Manufactured Wetland Materials. These materials shall meet the following requirements:

The pH of the material shall be between 5.0 and 7.0.

The organic content shall be not less than 15% or more than 20% dry weight basis and be comprised of leaf or well rotted manure compost meeting the requirements of §713-15 Compost.

Granular material shall be naturally occurring mineral soil.

Gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 16</td>
<td>100</td>
</tr>
<tr>
<td>No. 40</td>
<td>85 to 100</td>
</tr>
<tr>
<td>No. 60</td>
<td>40 to 100</td>
</tr>
<tr>
<td>No. 200</td>
<td>5 to 10</td>
</tr>
</tbody>
</table>

The Contractor may amend impacted upland area and manufactured wetland topsoil with approved materials and by approved methods to meet the material requirements.
STOCKPILING, SAMPLING & TESTING.

Topsoil-Reuse of On-Site Materials and Topsoil- On-Site Wetland Materials: Topsoil acquired from sites that are designated in the contract documents are not subject to requirements for stockpiling, sampling, and testing.

Topsoil Types Roadside, Lawns & Special Planting Mix, Acidic, and Topsoil - Manufactured or Offsite Wetland Materials are subject to the requirements for stockpiling, sampling and testing.

Stockpiling. The details for stockpiling methods and requirements may be obtained from the Landscape Architecture Bureau.

Sampling. The details for sampling methods and requirements may be obtained from the Landscape Architecture Bureau.

Samples taken for topsoil amended or manufactured with approved composted biosolids shall be identified as such.

Contractors who believe that an error was made in sampling the topsoil shall, within one work day, indicate the alleged error in writing to the Engineer. The Engineer will respond within 7 calendar days.

TESTING.

Composted Biosolids. Composted biosolids used to amend or manufacture topsoil shall conform to the applicable requirements of §713-15 Compost. Composted biosolids shall require a certificate, from a laboratory approved by the NYS Department of Health, verifying compliance with all applicable laws, rules, and regulations. The certification shall be provided to the Engineer by the Contractor prior to the delivery of any composted biosolids, topsoil containing composted biosolids, or other such regulated material to the contract site. The material shall be approved before it is used.

The Contractor shall have topsoil that has been amended with approved composted biosolids or other such regulated material tested to ensure compliance with the pH organic content, and gradation requirements certified by a nationally recognized entity which provides soils laboratory services and provide the laboratory results to the Engineer.

Topsoil Testing. All other material tests required by this section, will be performed by the Department or its designated representative, in conformance with the procedures contained in the appropriate Department publications or test methods. The details for testing methods and requirements may be obtained from the Materials Bureau.

Stockpiles meeting all requirements for pH, organic and gradation may be accepted and used. Stockpiles that when tested fail to meet requirements for pH or organic may be amended in place. A stockpile that fails to meet gradation requirements may not be accepted. The Contractor shall provide a plan for amending pH and/or organic to the Engineer certified by a nationally recognized entity which provides soils laboratory services. Once the Department accepts the plan and certification the Contractor may amend the stockpile. Re-testing of the stockpile is not required prior to placing the topsoil materials.

BASIS OF ACCEPTANCE. Topsoil-Reuse of On-Site Materials and Topsoil- On-Site Wetland Materials will be accepted on the basis of a visual inspection.

Topsoil - Roadside, Topsoil – Lawns, Topsoil - Special Planting Mix, Topsoil - Acidic, and Topsoil - Manufactured or Offsite Wetland Materials will be accepted on the basis of the stockpile meeting all the requirements or the stockpile material meeting all gradation requirements and a plan and certification approved by Engineer for amending pH and organic requirements.

713-02 LIMESTONE

SCOPE. This specification covers the material requirements for limestone.
MATERIAL REQUIREMENTS. Limestone shall be ground limestone having a minimum total neutralizing value of 88% calcium carbonate equivalence. A minimum of 90% shall pass the No. 20 sieve and a minimum of 60% shall pass the No. 100 sieve.

PACKAGING. Packaged agricultural limestone packed in the manufacturer's standard containers shall weigh not over 100 lbs each, with the name of the material, net weight of contents and the manufacturer's name and guaranteed analysis appearing on each container.

BULK DELIVERY. Bulk delivery of limestone shall be accompanied by a certificate providing the names, weight and analysis as specified herein for packaged material.

BASIS OF ACCEPTANCE. Limestone will be accepted on the basis of the manufacturer's label or certificate and visual inspection for compliance with the material requirements.

713-03 FERTILIZER

SCOPE. This specification covers the material requirements for fertilizers.

MATERIAL REQUIREMENTS. Fertilizers may be either fluid or dry formulations of commercial carriers of available plant nutrients. Fertilizers may also be provided in standardized packets designed to control the release of their contents over a specified period of time.

The following mixed commercial fertilizers shall contain total nitrogen, phosphoric acid and soluble potash in the ratios stated:

Type A. 2-1-1 or 3-1-1 (approximate analysis). Minimum of 50% water insoluble nitrogen and with a salt index of less than 50.

Type B. 1-2-1 (approximate analysis) 50 % Organic/IBDU (Isobutydine diurea)/ or coated for slow release with a water in-soluble nitrogen (WIN).

Type C. Nitrate of soda containing a minimum of 16% nitrogen or Ammonium sulfate containing a minimum of 20.5% nitrogen as appropriate to soil conditions.

Type D. Bonemeal shall be commercial steamed bonemeal, finely ground with a minimum of 1.0% nitrogen and a minimum of 20% phosphoric acid.

Type E. 13-0-0 (approximate analysis) shall be a commercial slow release organic nitrogen fertilizer such as blood meal

PACKAGING. Packaged fertilizers shall be in the manufacturer's standard containers or packets. Containers shall weigh not more than 100 lbs and shall include a label stating the name of the material, the net weight of the contents, the manufacturer's name, and the guaranteed analysis of the fertilizer. Labels on containers of fluid fertilizers shall state the net volume of the container. Packets shall include a label stating the name of the material, the net weight of the contents, the manufacturer's name, and the guaranteed analysis of the fertilizer.

BULK DELIVERY. Bulk delivery of fertilizer shall be accompanied by the manufacturer's certificate stating the name of the manufacturer, the guaranteed analysis and the weight of the shipment. Certificates accompanying bulk deliveries of fluid fertilizers shall also state the net volume of the shipment.

BASIS OF ACCEPTANCE. Fertilizer will be accepted on the basis of the manufacturer's label or certificate indicating conformance with this specification and visual inspection. Material that has become caked or otherwise damaged will be rejected.
# 713-04 Seeds

**Scope.** This specification covers the material requirements for seeds for grasses, legumes, wildflowers and cereals.

**Material Requirements.** All species and their cultivars or varieties must be disease and insect resistant, not considered noxious or invasive, guaranteed hardy and adapted for the locality, and among the top 25% of commercially-available seed types as rated by NTEP (National Turfgrass Evaluation Program). Cultivars infected with non-pathogenic (non-disease causing) fungal endophytes are preferred, if available. Experimental varieties should be excluded.

Material other than pure live seed shall comprise only nonviable seed, chaff, hulls, live seed of crop plants other than those specified, harmless inert matter and non-noxious, non-invasive weed species seeds. Non-noxious, non-invasive species weed seeds will be permitted up to 1% of the gross weight of each seed mixture.

Seeding mixtures shall be composed of perennial (except for annual rye) grasses suited to the site conditions, use, soils, moisture and local climate. All seeds of leguminous plants requiring inoculation shall be inoculated prior to mixing or sowing unless otherwise specified or approved or unless accompanied by a certificate of preinoculation. The Contractor may propose a dormant seed additive for cold weather seeding at no additional cost to the state. The Contractor may propose an alternate range for a component of a given mix based on regional and commercial availability.

## A. General Roadside Seed Mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Fescue (2 varieties min. must include creeping red)</td>
<td>Festuca rubra var.</td>
<td>Commercial</td>
<td>50-70</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>15-40</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>Lolium multiflorum</td>
<td>Commercial</td>
<td>5-15</td>
</tr>
<tr>
<td>Clover (White preferred)</td>
<td>Trifolium repens</td>
<td>Commercial</td>
<td>5-10</td>
</tr>
</tbody>
</table>

## B. Restoration/High-traffic Seed Mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky Bluegrass (2 var. min.)</td>
<td>Poa pratensis</td>
<td>Commercial</td>
<td>5-20</td>
</tr>
<tr>
<td>Fine Fescue (2 var. min.; must include creeping red)</td>
<td>Festuca rubra var.</td>
<td>Commercial</td>
<td>15-40</td>
</tr>
<tr>
<td>Tall Fescue (2 var. min.)</td>
<td>Festuca arundinacea</td>
<td>Commercial “turf” type</td>
<td>25-50</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>10-30</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>Lolium multiflorum</td>
<td>Commercial</td>
<td>5-15</td>
</tr>
<tr>
<td>Ticklegrass (or, if unavailable, Redtop)</td>
<td>Agrostis scabra (or Agrostis alba)</td>
<td>Commercial</td>
<td>0-15</td>
</tr>
<tr>
<td>Clover (White preferred)</td>
<td>Trifolium repens</td>
<td>Commercial</td>
<td>0-5</td>
</tr>
</tbody>
</table>

## C. Lawn Seed Mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky Bluegrass (3 var. min.)</td>
<td>Poa pratensis</td>
<td>Commercial</td>
<td>15-40</td>
</tr>
<tr>
<td>Fine Fescue (2 var. min. must include creeping red)</td>
<td>Festuca rubra var.</td>
<td>Commercial</td>
<td>30-50</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>15-40</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>Lolium multiflorum</td>
<td>Commercial</td>
<td>5-15</td>
</tr>
</tbody>
</table>
LANDSCAPE DEVELOPMENT MATERIALS

D. Salt-Tolerant Seed Mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Fescue (must include creeping red and hard fescue)</td>
<td>Festuca rubra var. &amp; Festuca longifolia*</td>
<td>Commercial</td>
<td>10-25</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>10-40</td>
</tr>
<tr>
<td>Tall Fescue (2 var. min., selected for maximum salt tolerance)</td>
<td>Festuca arundinacea</td>
<td>Commercial “turf” type</td>
<td>25-45</td>
</tr>
<tr>
<td>Ticklegrass (or, if unavailable, Redtop)</td>
<td>Agrostis scabra (or Agrostis alba)</td>
<td>Commercial</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkaligrass (weeping preferred)</td>
<td>Puccinellia distans</td>
<td>Commercial</td>
<td>15-40</td>
</tr>
</tbody>
</table>

*aka. F. trachyphylla Krajina; F. brevipila Tracey

Wildflower Seed Mix. Wildflower seed mix shall be as specified in contract documents

Nomenclature. The common and scientific names of grasses, legumes, wildflowers and cereals specified in the contract documents shall conform to one or more of the authorities on botanical nomenclature recognized by the American Association of Nurserymen.

Stratification. Seeds in Wildflower Seed Mixes that require cold and/or warm stratification in order to germinate shall be prepared prior to sowing or used only in fall planting mixes.

Legume Inoculants. Legume seeds requiring inoculation shall be accompanied by adequate amounts of their proper inoculants unless accompanied by certification of preinoculation. Inoculants for treating legume seeds shall be a standard culture of nitrogen fixing bacteria that is not more than one year old. Each inoculant shall be the specific culture required for each legume. Inoculants shall be supplied only from suppliers licensed by the Department of Agriculture and Markets to sell legume inoculants in New York State.

PACKAGING. Seeds shall be furnished and delivered in labeled containers or bags that are acceptably sealed or sewn tight. All seed and seed labels shall be in accordance with Agriculture and Markets Law. Container or bag labels shall not be removed prior to the time of sowing nor shall container labels be altered, obliterated or otherwise illegible.

When seeds are to be accepted by certification, they may be mixed prior to delivery. The certification shall consist of the label that shall be attached to each container of seed in accordance with the provisions of the Agriculture and Markets Law. Seeds will not be accepted by certification unless the test dates shown on the seed container labels are within the twelve months prior to the date that the seeds are sown.

Seeds shall be furnished damage free, with no mold, rot or deterioration, as a result of handling, transit or storage. After delivery to the Contractor, seed shall be stored so that it is protected from damage or deterioration from any source.

BASIS OF ACCEPTANCE. Seeds will be accepted on the basis of the manufacturer's label or certificate indicating conformance with this specification and Agriculture and Markets Law.

713-05 MULCH FOR PLANTING

SCOPE. This specification covers the material requirements for wood and bark chips used as mulch, landscape bedding or erosion control.

MATERIAL REQUIREMENT. Wood and bark chips used for mulch, landscape bedding or erosion control may be the following.
**LANDSCAPE DEVELOPMENT MATERIALS**

**TYPE A Seasoned Wood Chips.** This shall be derived from 100% first generation hardwood or softwood. The chips shall be seasoned (aged a minimum of 1 year), free from leaves, young growth, unchipped branches, twigs 1 inch or greater in diameter, wood shavings, sawdust or foreign materials such as stones, nails, plastic, etc. Wood chips shall not exceed 3 inches in the greatest dimension.

**TYPE B Recycled or Green Wood Chips.** Shall be wood chips derived from unadulterated construction and/or demolition waste wood. Wood chips derived from construction and/or demolition waste wood shall not be contaminated with paint, chemicals, asphalt shingles, glass, nails, etc. Wood chips shall not exceed 3 inches in the greatest dimension.

**TYPE C USDA-APHIS Protocol Wood Chips.** USDA-APHIS (United States Department of Agriculture- Animal and Plant Health Inspection Service) Protocol wood chips shall be wood chips from current construction activities derived from trees removed and chipped according to USDA-APHIS protocol. Wood is chipped or mulched to less than 1 inch in at least two dimensions or apply an APHIS approved method.

**Type D Shredded Bark Mulch.** Shredded bark mulch shall be commercially available double or triple-processed aged bark mulch made from a mixture of hardwood and/or softwood. It shall be created by regrinding the mulch in a tub grinder and be finely screened to a uniform particle size. It shall be composed of bark and have a low wood content with no hidden woods from construction and demolition debris or pressure treated lumber.

**Type E Pine Bark Chunks or Nuggets.** Pine Bark chunks or nuggets shall be commercially available, manufactured from 100% pine bark and shall not exceed 3 inches.

**BASIS OF ACCEPTANCE.** Wood and bark chips will be accepted on the basis of visual inspection, upon delivery, for compliance with the material requirements and applicable certification of compliance with 6 NYCRR Part 360.

Shredded bark mulch will be accepted on the basis of a visual inspection for compliance with the material requirements.

**713-06 TREES, SHRUBS AND VINES**

**SCOPE.** This specification covers the material requirements for trees, shrubs, vines, and other plants

**MATERIAL REQUIREMENT.**

**Nomenclature.** The common and scientific nomenclature for plants shall be in conformity with the American Nursery and Landscape Association’s American Standard for Nursery Stock (ANSI Z60.1).

**Quality and Size.** Plants, including root spread and ball size, shall be in accordance with the American Standard for Nursery Stock (ANSI Z60.1). All plants shall have a normal habit of growth and be typically characteristic of their respective kinds. The specified plant sizes shall be the minimum size allowed and shall include plants from that size up to but not including the next larger size. Plants shall not be pruned at the time of digging or before delivery and no plants shall be cut back from larger sizes to meet the sizes specified. Plants shall be free from injury, insect damage, infestation and disease. Plants except those for transplanting shall be nursery and/or field grown and shall bear evidence of proper nursery care, including adequate transplanting and root pruning. Containers shall be sufficiently rigid to hold the ball shapes and protect the root balls during handling and shipping. Plants shall have been grown in the container long enough for new fibrous roots to have developed so that the root ball is firm and will retain its shape and hold together when removed from the container. The plants shall be in a healthy growing condition with tops which are of good quality, and shall have been adequately hardened off before shipment. The plants shall have been grown in similar climatic conditions to the planting location.
LANDSCAPE DEVELOPMENT MATERIALS

Digging Plants. Digging shall avoid all possible injury to, or loss of roots, but when required, roots cut shall be cleanly cut. No cold storage plants will be accepted unless approved in writing prior to delivery. Plants stored temporarily shall be properly heeled in or otherwise protected from injury.

Root Protection. After plants are dug, their roots shall be protected from injury such as caused by heat, sun, wind and freezing temperatures.

Trees. Pruning cuts on nursery and/or field grown trees shall be healed over. There shall be no cut back crowns or leaders and no abrasions of the bark. Any stem to rootstock grafts shall be healed. Trees must have good fibrous root systems characteristic of the kind. Deciduous trees shall have normal spread of crowns unless otherwise specified. Bare root trees shall not require earth adhering to the roots except as required under Root Protection above.

Balled and burlapped trees shall be properly dug and protected to preserve the natural earth in contact with the roots. No processed balls will be accepted. The balls shall be of the required size, firmly wrapped and tied with approved materials. No balled plants will be acceptable if the ball is cracked or broken.

The tops of trees shall be well formed structurally, but they are not required to have more than reasonably straight trunks, nor better than average well balanced crowns, nor be of specimen or street tree quality consistent with ANSI Z60.1 unless those requirements are specified on the plans.

Shrubs. Shrubs shall have good fibrous root systems. The quality of balled and burlapped shrubs and container grown shrubs shall be as specified in ANSI Z60.1.

Vines. Vines shall be as specified in ANSI Z60.1. Vines shall be field grown unless otherwise specified. Pot grown plants shall be vigorous, well-developed plants, well established in pots with sufficient roots to hold the earth intact after removal from containers but they shall not be rootbound.

Plants for Transplanting. Plants, including root spread and ball size, shall be in accordance with ANSI Z60.1 for Collected Plant.

LABELING. Labeling shall be in accordance with currently accepted nursery labeling practice except that the Contractor shall upon request supply positive identification by genus and species of any plant.

TRANSPORTATION. Tarpaulins or other covers shall be placed over plants transported by open vehicles. Closed vehicles shall be ventilated to avoid overheating and the doors shall be kept closed during shipment to prevent plants from drying. The heads of trees shall be tied-in carefully to prevent fracturing or breaking the branches. Trunks and branches shall be adequately supported and padded to avoid scraping or bruising.

INSPECTION. The Contractor shall be responsible to supply current, valid certificates of inspection of plant materials which may be required by federal, state, provincial or other authority to accompany shipments of plants.

The Department will identify by suitable non-injurious means such as painting, marking by various methods, etc. all plant material rejected upon delivery to the contract site.

BASIS OF ACCEPTANCE: Acceptance will be based on visual inspection, upon delivery to site, by the Engineer for compliance with the materials requirements.

713-07 ROLLED EROSION CONTROL PRODUCTS AND SOIL STABILIZERS

SCOPE. This specification covers the material requirements for Rolled Erosion Control Products and Soil Stabilizers.
MATERIAL REQUIREMENTS

**Class I (Short-Term)** Light-duty, organic, or synthetic erosion control products.

**Type A.** No minimum shear stress is required. The product shall be capable of withstanding moderate foot traffic without tearing or puncturing.

**Type B.** No minimum shear stress is required.

**Type C.** Products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 1.5 psf (pounds force per square foot) at ½ inch soil loss.

**Class II (Intermediate-Term)** Erosion control products.

**Type A.** Jute Mesh. Jute mesh shall be of a uniform, open, plain weave of undyed and unbleached, single-jute yarn. Jute mesh shall be woven as follows:
- Approximately 55 warp ends per yard width.
- Approximately 37 weft ends per linear yard.
- Mass of jute mesh shall average 1.0 (± 5%) pound per square yard.

**Type B.** Products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 1 psf at ½ inch soil loss.

**Type C.** Products made entirely of organic materials. Only 100% organic materials are allowed. Products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 1 psf at ½ inch soil loss.

**Type D.** Organic or nonorganic products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 2 psf at ½ inch soil loss.

**Class III (Permanent)** Nondegradable synthetic [fibers, filaments, or nettings] which may be supplemented with degradable natural fiber components).

**Type A.** TRM (Turf Reinforcement Mat) mat products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 2 psf at ½ inch soil loss.

**Type B.** TRM mat products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 3 psf at ½ inch soil loss.

**Type C.** TRM mat (which includes a composite) products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 2.25 psf at ½ inch soil loss.

**Type D.** TRM mat (which includes a composite) products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 3 psf at ½ inch soil loss.

**Class IV Soil Stabilizers.** Soil stabilizers are short-term duration, erosion control products. When used alone, they shall be used on slopes 1:2 or flatter. They shall not be used in channels or in areas of concentrated flow. Type A, B, and C soil stabilizers may be used alone or in combination with Class
III, Types A and B Turf Reinforcement Materials where those products are used on slope applications.

**Type A.** Type A Soil Stabilizer shall be a soil binding system consisting of one of the following:

- A Cementitious soil binder which is added to wood cellulose fiber mulch, a Bonded Fiber Matrix (BFM), intended to form a thick, heavy-bodied crust or mat-like barrier that controls storm water and wind induced erosion. BFM's last up to six months and require a cure time up to 48 hours, without rain, to develop intimate soil contact.

- A Soil stabilizing polymer which is added to wood cellulose fiber mulch, a Polymer Stabilized Fiber Matrix (PSFM), intended to form a matrix that is designed to work directly with soil to maintain its stability by preserving existing soil structure, flocculating fine sediment being dislodged by storm water or wind, and to prevent splash erosion. PSFMs last up to six months and require a cure time up to 24 hours.

**Type B.** An anionic polyacrylamide (PAM) and calcium solution intended to reduce the erodibility of bare soils during construction activities or to enhance the performance of mulching on permanent slopes. Soil stabilizers, Type B, shall bond soil particles and shall effectively increase the soil particle size to 3/64 inch or larger. Soil stabilizers, Type B, shall reduce the movement of soil due to chemical bonding, thereby increasing the particle size rendering silt fence/sediment trapping devices more effective, and increase the water absorption of the soil.

**Type C.** A soil binder which may be made up of wood fibers, straw fibers, cotton fibers, interlocking fibers, polymers and hydro-colloid tackifiers, a Flexible Growth Medium (FGM) or Cotton Fiber Reinforcement Matrix (C-FRM). Intended to form a thick, heavy-bodied crust or mat-like barrier that controls storm water and wind induced erosion. FGMs/C-FRMs last up to a year and require no cure time to develop intimate soil contact.

**BASIS OF APPROVAL.** Application for approval shall be submitted to the Materials Bureau by the manufacturer. Upon approval by the Materials Bureau, the product will be placed on the Approved List.

**BASIS OF ACCEPTANCE.** Materials will be accepted on the basis of the manufacturer’s name and location appearing on the Approved List and a material certification that specifies the product conforms to this specification.

**713-08 MATERIALS FOR PROTECTION OF PLANTS**

**SCOPE.** This specification covers the material requirements for materials used in planting and protection of plant operations.

**MATERIAL REQUIREMENTS**

**Rodent Guards.** Shall be a commercially available horticultural product created for this activity.

**Stakes for Supporting Trees**

**A. Above Ground Support.** Shall be wooden stakes, commercially available product or system developed for supporting trees. Wooden stakes shall be 8 to 10 feet long with a minimum diameter of 2 to 2 1/2 inches or stakes 12 feet long which shall have a minimum diameter of 3 inches. The maximum diameter of stakes shall not exceed 4 inches. Stakes shall be pointed at one end. All wooden stakes shall be sound and free from insects and fungi.

**B. Underground Support.** Shall be a commercially available product or system developed for supporting trees.
**LANDSCAPE DEVELOPMENT MATERIALS**

**Wire.** Wire for guying plants shall be annealed steel wire (either galvanized or ungalvanized).

**Hose.** Hose for protecting the bark from guy wires shall be braided rubber, plastic, or reinforced materials. Hose shall be at least 3/4 inch outside diameter.

**Straps for Protecting Tree Bark.** Straps for protecting tree bark from guy wires shall be stretch resistant nylon or polypropylene fabric. Straps shall be 1 inch wide, shall have soft woven edges to assure abrasion resistance and shall have metal grommets at each end for the purpose of attaching guy wires. Straps shall be of sufficient length to assure guy wires will not be in contact with the tree. Straps for guying trees up to and including 2 inch in diameter shall have a minimum breaking strength of 1,000 lbs. Straps for guying trees up to and including 6 inches in diameter shall have a minimum breaking strength of 4,000 lbs.

**Anti-Desiccants.** Anti-desiccants shall be emulsions or other materials which will provide a protective film over plant surfaces, permeable enough to permit transpiration.

**Portable Drip Irrigation System (PDIS).** PDIS shall allow slow even watering. PDIS shall be a slow release watering system with accommodation for even watering. The fill opening shall accommodate a standard hose diameter. PDIS watering systems shall be constructed so that they can be attached to the trees, provide water from two drip points (minimum) and have a zipper or similar method to attach securely to the tree. PDIS watering system or bags shall be UV treated reinforced Polyethylene material. Each shall be sized according to manufacture’s recommendation for plant size and type.

**Mowing Markers.**

**A. Type A.** Mowing limit markers shall be any commercially available semi-rigid composite fiber reinforced plastic posts or flexible co-extruded polyethylene posts with U.V. inhibitors. Posts shall not crack at -20 °F. Posts shall have adhesive decals meeting the following requirements and conforming to the attached details:

- Posts or post assemblies shall be such that they can withstand wind and shall be approved by the Engineer.
- Approximate Width: 2.5 to 3 inches
- Length: 4 feet above ground
- Color: Medium to dark brown or black
- Anchor Device: Manufacturer’s standard anchor system

  Decals shall be brown or black and shall match the color of the posts. Decals shall be cast vinyl sheeting, adhesive on one side, with inks suitable for outdoor use and shall be covered with a laminate protective layer that provides resistance to weather, graffiti, vandalism and discoloration. Letters shall be white and of a size and weight to fully utilize the full dimension of the decal and shall be legible.

**B. Type B.** Mowing limit markers shall be any commercially available glass fiber reinforced polyester stakes, manufactured with UV inhibitors and shall not crack at -22° F. Tubular stakes shall be 3/16 inch (ID), with a 1/16 inch wall thickness, approximately 6 feet in length, and sealed on top with a cap or similar method.

- Color shall be olive drab green.
- Note: Solid glass fiber stakes which have the same length and color may be substituted with the approval of the Engineer.

**Reflective Tapes.** Material shall be reflective safety tape rated for 5 to 7 years of outdoor life meeting ASTM specifications D4596. Tape shall be 2 inch wide, reflective tape, in red or yellow.
BASIS OF ACCEPTANCE. Material for the protection of plants will be accepted on the basis of a visual inspection.

713-09 MYCORRHIZAL FUNGI

SCOPE. This specification covers the materials requirements for mycorrhizal fungi.

MATERIAL REQUIREMENTS. Mycorrhizal fungi shall be commercially available products suited to and labeled for the intended purpose.

Products for turf establishment shall be granular (when mixed directly with soil), or soluble powder or liquid (when mixed with seeds for drill seeding or hydroseeding) and shall typically include:

- Endomycorrhizal fungi. Live propagules (spores, colonized roots, hyphae) of vesicular arbuscular (VA) fungi including Glomus intraradices and at least two other Glomus species shown to be biologically adapted to grass.

Products for planting pits, beds and Tree Root Zone Treatment (Vertical Mulching/Aeration) shall typically be granular and shall typically include:

- Endomycorrhizal fungi. Live propagules (spores, colonized roots, hyphae) of vesicular arbuscular (VA) fungi including Glomus intraradices and at least two other Glomus species.

- Ectomycorrhizal fungi. Live spores of Pisolithus tinctorius and at least four Rhizopogon species.

Products may also include any or all of:

- Biostimulants such as Dry soluble yucca extract (yucca schidigera), soluble sea kelp extract (ascophyllum, nodosum) and humic acid (leonardite humates)
- Amino acids, vitamins, enzymes, beneficial bacteria, microbial metabolites, trichoderma fungi.
- Water management gels/polymers (for planting pits, beds and Tree Root Zone Treatment – typically not for turf applications).

PACKAGING. Mycorrhizal fungi shall be delivered in the manufacturer’s standard containers. Containers shall include a label stating the name of the material, species, propagule counts, application rates, expiration date, the net weight of the contents, and the manufacturer’s name.

BASIS OF ACCEPTANCE. Mycorrhizal fungi will be accepted on the basis of the manufacturer’s label or material certification indicating compliance with these specifications. The Department reserves the right to reject any material that has become caked or otherwise damaged. Material that has expired will be rejected.

713-10 MOISTURE RETENTION ADDITIVE

SCOPE. This specification covers the material requirements for moisture retention additive.

MATERIAL REQUIREMENTS. Moisture retention additives shall be commercially available Polyacrylamide or Co-polymer of Acrylamide Hydro gel polymer products.

PACKAGING. Moisture retention additives shall be delivered in the manufacturer’s standard containers. Containers shall include a label stating the name of the material, application rates, expiration date, the net weight of the contents, and the manufacturer’s name.

BASIS OF ACCEPTANCE. Moisture retention additives will be accepted on the basis of the manufacturer’s label or material certification indicating compliance with these specifications.
713-11 MULCH FOR TURF ESTABLISHMENT AND EROSION CONTROL

SCOPE. This specification covers the material requirements for organic mulch materials used in conjunction with turf establishment or erosion control.

MATERIAL REQUIREMENTS.

General
Mulch shall be manufactured so that the materials will remain uniformly suspended in water under agitation and will blend with seeds, fertilizer and other additives to form homogeneous slurry. It shall have the characteristics which, upon hydraulic application, shall form a blotter-like ground coating with moisture absorption and percolation properties and the ability to cover and hold seeds in contact with the soil. Mulch shall contain no growth or germination inhibiting factors.

Type I. Wood Fiber Mulch. Wood fiber shall be a first generation product manufactured directly from 100 percent wood which has been recovered or diverted from solid waste.
Wood fiber shall be manufactured from unadulterated wood that is not contaminated with paint, chemicals, non-wood shingles, plastic or other foreign materials. Wood fiber mulch shall not be manufactured exclusively from paper.

Type II Cellulose Mulch. Cellulose or Paper mulch shall be composed of 100% clean recycled cellulose fiber and free of plastic netting.
Water Holding Capacity >1000%
Moisture Content 12% +/- 3
Organic Matter >93%
Ash Content <7%
pH Range 6.5 +/- 2
Non toxic dye

Type III Cellulose and Wood Fiber Blend Mulch. Cellulose and Wood fiber blend shall be composed of biodegradable recycled 100 % wood fibers and recycled paper, phyto-sanitized and free from plastic netting.
Wood fiber 70% Minimum
Paper fiber 30% Maximum
Water Holding Capacity >1000%
Moisture Content 12% +/- 3
Organic Matter >93%
Ash Content <7%
pH Range 5.5 +/- 2

Type IV Cotton Hydro Mulch. Cotton hydro mulch shall be a blend of processed straw and reclaimed cotton plant materials.
Straw 80% Maximum
Reclaimed Cotton Plant Material 17% Minimum
Additives, Activators and Tackifiers Range 3 to 10%
Moisture Content 12% +/- 3
Organic Matter ≥90%

Type V Pelletized Hydro Mulch. Cellulose and Wood fiber blend shall be composed of clean cellulose fiber and raw lumber chips manufactured from unadulterated wood that is not contaminated with paint, chemicals, non-wood shingles, plastic or other foreign materials.
Wood fiber 20% Minimum
Paper fiber 80% Maximum
Water Holding Capacity >850%
LANDSCAPE DEVELOPMENT MATERIALS

Moisture Content  Range 12 to 15% +/- 3
Organic Matter >93%
Ash Content <7%
pH Range 7.0 +/- 2

PACKAGING AND LABELING. Mulch shall be supplied in the manufacturer's standard containers, with the name of the material, net weight of contents, the manufacturer's name and the air dry weight of fiber (equivalent to 10% moisture) appearing on each container.

STORAGE AND HANDLING. Store and handle in compliance with manufacturer’s instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations.

BASIS OF ACCEPTANCE. Mulch will be accepted on the basis of the manufacturer’s product label, including methods and rates of applications, and material certification indicating compliance with these specifications and any applicable regulatory requirements pertaining to solid waste management.

713-12 MULCH ANCHORAGE

SCOPE. This specification covers the material requirements for mulch anchorage.

MATERIAL REQUIREMENTS. Mulch anchorage shall be 713-07 Class IV Soil Stabilizers or any non-asphaltic, non-toxic commercially available products formulated for the purpose of anchoring or tacking straw mulch. The paper content of paper-based hydraulic mulch anchorage shall be 100 percent post consumer recovered from solid waste.

PACKAGING. Mulch Anchorage shall be furnished in the manufacturer's standard containers with the name of the material, net weight of contents, the manufacturer's name and the dry weight of fiber (equivalent to 10% moisture) appearing on each container. The instructions for mixing and application shall also appear on each container.

BASIS OF ACCEPTANCE. Mulch Anchorage will be accepted on the basis of the manufacturer's product label or product literature that indicates compliance with this specification. Materials that have become wet, caked, frozen, separated or otherwise unfit for use will be rejected.

713-13 PESTICIDES

SCOPE. This specification covers the material requirements for pesticides used to manage vegetation, insects, rodents and/or other target pests.

MATERIAL REQUIREMENTS. Pesticides shall be approved commercially available products that are currently registered by the US Environmental Protection Agency and the NYS Department of Environmental Conservation. Pesticides shall also have all required labels indicating that they are approved for the intended use.

PACKAGING. Pesticides shall be delivered and securely stored until used in the manufacturer's standard containers that have legible labels affixed. Pesticides that do not meet these packaging requirements will be rejected.

Pesticide containers shall be sealed. Containers with breaks, damage; or altered, obliterated, illegible, or missing labels will not be accepted.
LANDSCAPE DEVELOPMENT MATERIALS

**BASIS OF ACCEPTANCE.** Pesticides will be accepted on the basis of the original, sealed, and properly labeled pesticide containers; and two copies of sample labels and supplemental labels that include instructions for the intended use of the pesticide. Pesticides that have become wet, caked or otherwise unfit for use will be rejected.

**713-14 SOD**

**SCOPE.** This specification covers the material requirements for sod.

**MATERIAL REQUIREMENTS.** Sod shall be commercially grown sod and shall be accompanied by a certificate indicating compliance with the regulations of the NYS Department of Agriculture and Markets. Sources of sod shall be made known to the Engineer at least five calendar days before cutting. Sod shall be cut into squares or rectangular portions which shall be a minimum of 12 inches wide, or as approved, and may vary in length, but shall be of a size which will permit them to be lifted without breaking. Height of the grass shall not exceed 3 inches. The sod shall be cut to a minimum thickness of 3/4 inch. The sod shall be reasonably free from weeds in conformance with accepted commercial practice. The sod shall consist of a mixture of at least three permanent grasses such as bluegrass and fine leaved fescues, unless otherwise specified. Sod that is heat damaged or fermenting will be rejected.

**DELIVERY AND HANDLING.** Sod shall be delivered to the job within 24 hours after being cut and installed within 48 hours after being cut. The sod, when delivered to the contract site and during the time it is held on site, shall be sufficiently moist so the soil will adhere firmly to the roots when it is handled.

**BASIS OF ACCEPTANCE.** Sod will be accepted based on inspection for compliance with the material requirements.

**713-15 COMPOST**

**SCOPE.** This specification covers the material requirements for organic material used in conjunction with amending or manufacturing topsoil and for erosion control products.

**MATERIAL REQUIREMENTS.** Compost shall be the material resulting from the biological and biochemical decomposition of biosolids, source-separated organic waste, yard waste, leaves or agricultural waste. These composts shall have been commercially or municipally produced. Compost and composting facilities shall be in compliance with all federal laws (40 CFR Part 503 and others), Article 10 of the Agriculture and Markets Law and 6 NYCRR Part 360.

Biosolids, including mixed solid waste, septage and other sludges, are the solid or semi-solid organic material generated by a wastewater treatment plant. Source-separated organic waste (SSOW) is readily decomposable material that is separated at the point of waste generation, and may include, but not be limited to, food scraps, food processing residues, soiled and/or unrecyclable paper, and other compostable materials. Yard waste includes grass clippings, leaves and other similar readily-compostable organic material.

Compost shall be reasonably free of sticks, stones, refuse, materials deleterious to soil structure, or any material toxic or detrimental to plant germination and growth. Compost containing foreign material may be rejected on the basis of a visual examination.

Composted biosolids shall have a certificate from a laboratory approved by the NYSDOH verifying compliance with all applicable laws, rules, and regulations. Only facilities permitted to compost biosolids under 6 NYCRR Part 360 will be allowed to furnish biosolid compost. The certification shall be supplied by the Contractor prior to the delivery of any composted biosolids, topsoil containing composted biosolids, or other such regulated material to the contract site.
Type A. Compost for Turf Establishment, Sodding, and Planting. Compost for Turf Establishment, Sodding, and Planting shall have a minimum organic-matter content of 30% (dry-weight basis) as determined by loss on ignition.

Product shall be loose and friable, not dusty, and have a moisture content of 35% - 60%, (wet weight basis).

Particle size shall be < 1/2 inch, (100% passing).

Soluble salts concentration shall be < 4.0 mmhos/cm (ds/m), maximum.

Compost shall be stable to very stable.

pH shall be between 6.0-8.5.

Type B. Compost for Erosion/Sediment Control Filter Berms. Compost for Erosion/Sediment Control Filter Berms shall meet the requirements of AASHTO Designation MP 9-03 and as follows:

Minimum organic matter content 25% - 65% (dry-weight basis) surfaces to be vegetated; 25% - 100% (dry weight basis) surfaces to be left unvegetated.

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<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
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<td>1 inch</td>
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<td>3/4 inch</td>
<td>70 to 100</td>
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Maximum particle length: 6 inch

Soluble salt concentration shall be 5 mmhos/cm; (ds/m) maximum.

Compost shall be stable to very stable

pH shall be between 5.0 - 8.5.

Type C. Compost for Erosion/Sediment Control Compost Blankets (Mulch for Seeded Areas). Compost for Erosion/Sediment Control Compost Blankets, (mulch for seeded areas), shall meet the requirements of AASHTO Designation MP 10-03 and as follows:

For surfaces to be vegetated, minimum organic matter content 25% - 65% (dry weight basis); for surfaces to be left unvegetated 25% - 100% (dry-weight basis).

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<td>3/4 inch</td>
<td>65 to 100</td>
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<td>1/4 inch</td>
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</table>

Maximum particle length: 6 inch

Soluble salt concentration shall be 5 mmhos/cm; (ds/m) maximum.

Compost shall be stable to very stable.

pH shall be between 5.0 - 8.5.

Type D. Leaf Compost. The material shall consist exclusively of deciduous leaf material. Compost material that contains food waste, sewage waste, or other waste material is unacceptable.

The leaf compost shall be mature (actively composted for 6 months minimum, and temperature slightly above air temperature) and humic (organic material is no longer rapidly degrading). Mature compost material shall be a dark, friable, partially decomposed substance that has an earthy odor. Visible fibers should be short and dark with no discernable particles of leaf material. Because not all items decompose at the same rate screening may be necessary to remove larger partially decomposed material and/or undecomposed material.

Organic Content – 25% to 100% by dry weight

Natural Inert Material - <5% by dry weight of woody or green yard debris material.
**LANDSCAPE DEVELOPMENT MATERIALS**

Man Made Inert Material - <1% by dry weight of man made material such as glass or plastic.
Bulk Density – 636 to 812 kg/m³
Moisture Content – 30% to 60% by total weight

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Maximum particle length: 6 inch

**Type E. Well Rotted Manure.** The material shall consist of animal excreta with litter material. The well rotted manure shall be mature (aged a minimum of one year), dark brown or black in color, crumbly in texture, and shall not have an objectionable odor. The material’s moisture content shall be such that no visible free water or dust is produced when handling it. It shall contain no visible admixture of refuse or other physical contaminants or any material toxic to plant growth.

**BASIS OF ACCEPTANCE.** Compost will be accepted on the basis of a Producer’s label or a certificate of analysis by a laboratory certified by a nationally recognized entity indicating compliance with the material requirements and visual inspection.

Composted biosolids will be accepted on the basis of a material certification by a NYSDOH approved laboratory that the product conforms to this specification and all applicable regulations.

Compost supplied or manufactured by participants in the US Composting Council’s Seal of Testing Approval Program will be accepted on the basis of the Program’s Compost Technical Data Sheets. The data shall represent a minimum of one year of testing results and the most recent test shall have been conducted with ninety days of material acceptance.

Compost supplied or manufactured by suppliers that do not participate in the US Composting Council Seal of Testing Approval Program will be accepted on the basis of a material certification, by a laboratory certified by a nationally recognized entity, that the product conforms to this specification.

The Department reserves the right to sample and test the materials subsequent to delivery.

713-16 (VACANT)

713-17 SULFUR

**SCOPE.** This specification covers the material requirements for elemental sulfur (flowers of sulfur).

**MATERIAL REQUIREMENTS.**

**PACKAGING.** Agricultural sulfur packed in the manufacturer's standard containers shall weigh not over 100 lbs each, with the name of the material, net weight of contents and the manufacturer's name and guaranteed analysis appearing on each container. Sulfur shall be commercially available products.

**DELIVERY.** Bulk delivery of sulfur shall be accompanied by a certificate providing the names, weight and analysis as specified herein for packaged material.

**BASIS OF ACCEPTANCE.** Sulfur will be accepted on the basis of the manufacturer's label or certificate and visual inspection for compliance with the material requirements.

713-18 WEED CONTROL BARRIERS
LANDSCAPE DEVELOPMENT MATERIALS

SCOPE. This specification covers the material requirements for landscape fabrics, mats and Geotextiles specifically manufactured to control weed growth.

MATERIAL REQUIREMENTS. Weed control barriers shall be commercially available products.

Type A. Permeable Landscape Fabric. Permeable Landscape Fabric shall be a permeable weed blocking geotextile resistant to rot, mold, chemicals and micro-organisms which allows the free flow of water, air, fertilizers and nutrients.

Type B. Permeable Landscape Fabric with Herbicide. Permeable Landscape Fabric with Herbicide shall be durable, nonwoven, polypropylene geotextile fabric with permanently attached nodules containing a slow release herbicide with a maximum EPA toxicity rating of class IV.

Type C. Permeable Weed Barrier Mat. Permeable Weed Barrier Mat shall be a commercial weed control product. The mat shall prevent sunlight, water, or vegetation nutrients from reaching the soil underneath. The mat shall contain no herbicides and shall resist ultraviolet light, mildew, and algae. The mat shall be self-extinguishing when removed from flame.

The mat shall be a polyester matting system a minimum of 0.2 inches thick, with a minimum weight of 1.8 pounds per square yard, able to support pedestrian traffic and commercial tractor mowing equipment’s wheels and skid plates without displacement.

BASIS OF ACCEPTANCE. Weed control mats or fabric will be accepted on the basis of the manufacturer’s label or certificate and visual inspection for compliance with the material requirements.

713-19 STRAW

SCOPE. This specification covers the materials requirements for straw.

MATERIAL REQUIREMENTS. Straw for mulching shall be stalks of oats, wheat, rye or other similar crops which are free from noxious and invasive species. Straw shall show no signs of excessive moisture and be visually free of mold or mildew.

BASIS OF ACCEPTANCE. Straw will be accepted on the basis of a visual inspection for compliance with the material requirements.
LANDSCAPE DEVELOPMENT

Make the following changes to the Standard Specifications dated May 4, 2006. Pages 534 to 549, Delete Sections 610 – 615 in their entirety and, Replace them with the following:

SECTION 610 – GROUND VEGETATION – PREPARATION, ESTABLISHMENT AND MANAGEMENT

610-1 DESCRIPTION.

610-1.01 Topsoil. This work shall consist of furnishing, screening, storing, stockpiling and placing topsoil in accordance with the contract documents and as directed by the Engineer.

610-1.02 Preparation of Subsoil for Turf Establishment. This work shall consist of ground preparation when topsoil is not included in the work prior to establishment of turf in accordance with the contract documents and as directed by the Engineer.

610-1.03 Turf Establishment. The work shall consist of ground preparation and establishing turf in accordance with the contract documents and as directed by the Engineer.

610-1.04 Wildflower Seeding. The work shall consist of ground preparation, furnishing and placing wildflower seeding materials and caring for wildflower areas in accordance with the contract documents and as directed by the Engineer.

610-1.05 Sod. The work shall consist of ground preparation, furnishing, installing and caring for sod in accordance with the contract documents and as directed by the Engineer.

610-1.06 Soil Amendments. The work consists of furnishing and placing soil amendments in accordance with the contract documents and as directed by the Engineer.

610-1.07 Compost. The work consists of furnishing, placing and incorporating compost in accordance with the contract documents and as directed by the Engineer.

610-1.08 Mulch for Planting. The work consists of furnishing and placing mulch, in accordance with the contract documents and as directed by the Engineer.

610-1.09 Permeable Weed Control Landscape Fabric. The work consists of furnishing and placing permeable landscape fabric for weed control, in accordance with the contract documents and as directed by the Engineer.

610-1.10 Watering Vegetation. This work shall include watering turf, sod, wildflower seeding, trees, shrubs, ground covers, vines, other plants, and filling portable drip irrigation systems in accordance with the contract documents and as directed by the Engineer.

610-1.11 Weed Removal. This work shall consist of removal and disposal of all native and non-native weeds including roots from newly established turf and sod areas, wildflower seeded areas, tree and shrub pits and plant beds in accordance with the contract documents and as directed by the Engineer.

610-1.12 Mowing. This work shall consist of mowing newly established seeded or sodded areas including the removal and disposal of any debris and litter which has accumulated prior to or between mowings, in accordance with the contract documents and as directed by the Engineer.

610-1.13 Mowing Limits Markers. This work consists of furnishing and installing mowing limit markers in accordance with the contract documents and as directed by the Engineer.
LANDSCAPE DEVELOPMENT

610-2 MATERIALS

610-2.01 Topsoil. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing. Excavated material from earthwork operations defined in Section 203 Excavation and Embankment that is unsuitable for embankments but conforms to §713-01 Topsoil is acceptable.

   Topsoil 713-01

610-2.02 Preparation of Subsoil for Turf Establishment. None specified.

610-2.03 Turf Establishment. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

   Water 712-01
   Seeds 713-04
   Mulch For Turf Establishment and Erosion Control 713-11
   Mulch anchorage 713-12
   Straw 713-19

610-2.04 Wildflower Seeding. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

   Water 712-01
   Seeds 713-04
   Mulch For Turf Establishment and Erosion Control 713-11
   Mulch anchorage 713-12
   Straw 713-19

610-2.05 Sod. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

   Water 712-01
   Topsoil 713-01
   Sod 713-14

610-2.06 Soil Amendment. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

   Water 712-01
   Limestone 713-02
   Fertilizer 713-03
   Mycorrhizal Fungi 713-09
   Moisture Retention Additive 713-10
   Sulfur 713-17

610-2.07 Compost. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

   Compost 713-15

610-2.08 Mulch for Planting. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

   Mulch for Planting 713-05

610-2.09 Permeable Weed Control Landscape Fabric. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

   Weed Control Barriers 713-18
610-2.10 Watering Vegetation. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.
   Water 712-01

610-2.11 Weed Removal. None specified.

610-2.12 Mowing. None specified.

610-2.13 Mowing Limits Markers. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.
   Materials for the Protection of Plants 713-08

610-3 CONSTRUCTION DETAILS

610-3.01 Topsoil.

A. General. The subsoil within the areas to be covered by topsoil shall be graded so that the completed work after the topsoil is placed shall conform to the specified lines and grades. The Contractor shall scarify or till the surface of the subsoil to a depth of 150 mm before the topsoil is placed to permit bonding the topsoil with the subsoil. Tillage by disking, harrowing, raking or other approved methods shall be accomplished in such a manner that depressions and ridges formed by tillage shall be parallel to the contours.

   Topsoil in an unworkable condition due to excessive moisture, frost, or other conditions shall not be placed until its consistency is workable for spreading. Topsoil shall be placed on the designated area and spread to the depth specified in the contract documents or a minimum of 100 mm for turf areas and 75 mm for sod areas.

   The finished surface shall be maintained for subsequent contract work such as seeding, sodding, mulching or planting.

   The sites of all stockpiles shall be graded and maintained for subsequent contract work. Surplus topsoil will become the property of the Contractor.

   Roots and top growth of non-native weeds or invasive species that emerge from topsoil stockpiles or after placement of the topsoil shall be eradicated and disposed of in accordance with §610-3.11 Weed Removal immediately upon emergence. Weed removal, treatment and disposal of invasive species will be paid for separately.

B. Topsoil – Reuse On-Site Materials. Topsoil stripping shall be completed prior to starting the general excavation in an area. The Contractor shall take reasonable care that the topsoil is not contaminated during the stripping and other handling operations.

   Topsoil identified for reuse that has a known, established population of invasive species shall be treated to eliminate the presence of invasive species per §610-3.11 Weed Removal. The invasive species material shall be disposed appropriately and then the resulting topsoil may be used within the limits. Treatment and disposal of invasive species will be paid for separately.

C. Topsoil – Roadside, Lawn, Special Planting Mix and Acidic. The Contractor shall place topsoil only from approved stockpiles.

D. Topsoil – On-Site Wetland and Wetland Off-Site or Manufactured. The Contractor shall not use topsoil wetlands materials which exhibit the presence of invasive species. Care shall be taken not to impact wetland areas remaining.

   On-site wetland topsoil stripping shall be completed prior to starting the general excavation in an area. After stripping, on-site wetland topsoil shall be placed within 24 hours or stored within the contract limits at a location approved by the Engineer.
610-3.02 Preparation of Subsoil for Turf Establishment. Prior to establishment of turf in areas that are not to receive topsoil or other permanent erosion control measures, the Contractor shall remove all loose stones and other objects over 50 mm in size to a 100 mm depth. The Contractor shall mix compost with subsoil in accordance with §610-3.07 B. Turf Establishment With No Topsoil/ On Subsoil within the areas to be seeded and grade the surface so that the completed work shall conform to the specified finished lines and grades. Compost will be paid for separately.

610-3.03 Turf Establishment. The Contractor shall coordinate establishment of turf with other site and construction activities.

The Contractor shall clean all equipment involved in turf establishment to remove plants, seeds and propagules prior to commencement of work. Any work to clean equipment shall be at no additional cost to the State.

The Contractor shall apply the seed mix at one and one half to two times the manufacturer’s recommended rate. Any method of sowing that does not injure the seeds and achieves even coverage in the process of spreading will be acceptable.

The Contractor shall perform the initial watering and shall spread straw uniformly in a continuous blanket to hide the soil from view or mulch Types I – V as specified in the contract documents. Rolled Erosion Control products shall be installed according to manufacturer’s recommendations and paid for separately. Mulch anchorage shall be applied.

The Contractor shall water, mow, and weed the turf establishment areas for the duration of the contract or until turf areas are accepted. Watering, mowing, and weeding to care for the turf will be paid for separately. Any work required to correct initial seeding (installation) shall be done at no additional cost to the State.

A. Turf Establishment – Roadside. Areas will be accepted when:

- free from thin or bare ground greater than 300 mm in diameter;
- at least 80 percent of the ground surface is covered with established specified permanent turf grass species;
- they have had one mowing cycle in accordance with §610-3.12 unless conditions prevent mowing, in which case turf grass shall be an average minimum height of 125 mm; and
- they exhibit healthy green color.

B. Turf Establishment- Lawns. Areas will be accepted when:

- free from thin or bare spots greater than 150 mm in diameter;
- at least 90 percent of the ground surface is covered with established specified permanent turf grass species;
- they have had one mowing cycle in accordance with §610-3.12 unless conditions prevent mowing, in which case turf grass shall be an average minimum height of 75 mm; and
- they exhibit healthy green color.

610-3.04 Wildflower Seeding. The Contractor shall clean all equipment involved in wildflower seeding to remove plants, seeds and propagules prior to commencement of work at no additional cost to the State.

The Contractor shall install wildflower seeding materials in accordance with the contract documents. Any method of sowing that does not injure the seeds and provides soil contact in the process of spreading will be acceptable. The Contractor shall apply the seed mix at twice the seed supplier’s recommended rate.

The Contractor shall perform the initial watering and spread straw or mulch Types I – V as specified in the contract documents, uniformly at a rate consistent with seed supplier recommendations. Mulch anchorage is required unless otherwise specified in the contract documents. Wildflower seeding areas will be accepted after the seeding operation is complete. Any work required to correct initial seeding (installation) shall be done at no additional cost to the State.
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The Contractor shall water the wildflower seeding areas for the duration of the contract. Watering to care for the wildflower seeding areas will be paid for separately.

610-3.05 Sod. The Contractor shall generally place sod during the seasons identified in Table 610-1 Sodding Seasons. The Contractor may request extension of seasons, provided the other conditions are met.

<table>
<thead>
<tr>
<th>Geographic locations</th>
<th>Spring</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-Essex, Warren</td>
<td>4/15-6/30</td>
<td>8/15-10/15</td>
</tr>
<tr>
<td>R2-Hamilton, Herkimer</td>
<td>4/1-6/15</td>
<td>8/15-10/31</td>
</tr>
<tr>
<td>R7-Lewis, St. Lawrence, Franklin, Clinton, Jefferson</td>
<td>3/1-4/30</td>
<td>8/21-11/15</td>
</tr>
</tbody>
</table>

The subgrade of areas to be sodded shall be excavated and firmed to a sufficient depth below the finished grade of the sod to accommodate the tamped or rolled thickness of topsoil and sod. No frozen sod shall be placed nor shall sod be placed on frozen ground surface.

The Contractor shall exercise care to retain the soil existing on the roots of the sod during transporting, handling and transplanting operations.

Sod shall be placed on a minimum of 75 mm of moist topsoil. The topsoil will be paid for separately. The finished sod soil surface shall be flush with surface of the adjacent soil and adjacent structures. It shall meet the finished grades as shown in the contract documents.

Sod will be accepted when:
- It has been in place a minimum of 60 days after installation,
- It is 95 percent covered with permanent grass species,
- It has had one mowing cycle in accordance with §610-3.12 Mowing,
- It exhibits healthy green color,
- It is free from thin, bare or brown spots greater than 150 mm in diameter, and
- It is firmly rooted in the soil.

Sod not meeting the standards for acceptance, shall be re-sodded until a satisfactory turf has been established, at no additional expense to the State.

The Contractor shall water, mow and weed the sodded areas as necessary until contract final acceptance. These items will be paid for separately.

610-3.06 Soil Amendments. The Contractor shall place, apply or incorporate fertilizer, limestone, mycorrhizal fungi, sulfur and/or moisture retention additive where shown in the contract documents.

When mycorrhizal fungi are specified, application rates for turf shall ensure an even distribution of 250,000 propagules minimum per hectare for drill seeding and 2,500,000 propagules minimum per hectare for hydroseeding. Application rates for planting and Tree Root Zone Treatment, as well as any other aspects of distributing and/or incorporating mycorrhizal fungi, shall be in accordance with the manufacturer’s recommendations.

All other amendments shall be mixed with topsoil prior to placing, spread evenly over the surface of turf, wildflower or sod areas, applied within shrub saucers or applied over the plant beds as appropriate, at the rates recommended by the manufacturer or as specified in the contract documents. The method of
application shall ensure an even distribution. When hydraulic application is used, the minimum rate of water application shall be in accordance with manufacturer’s recommendation.

Trees shall be fertilized using Method No. 1, No. 2 or No. 3 in accordance with the contract documents.

**A. Method No. 1.** Holes shall be made in the earth about 0.5 M and 0.5 M apart, and located in the outer two-thirds (as measured on the radius) of the circular area lying under the limits of the tree branches. The holes shall be made with a crowbar, soil auger, pneumatic equipment or other approved tools and care shall be taken to avoid injury to the roots. Fertilizer shall be applied at the rate specified; placing equal amounts of fertilizer in the lower 300 mm of each hole.

**B. Method No. 2.** Fertilizer shall be applied to soil’s surface hydraulically at the rate specified with sufficient water to saturate the soil for the area and depth of the tree roots without creating air pockets.

**C. Method No. 3.** Fertilizer rate and method of application shall be as specified in the contract documents.

**610-3.07 Compost.**

**A. Existing Soil:** The Contractor shall spread 50 mm of Compost Type A or E within the limits shown in the contract documents and tilled into existing soil to a total depth of 150 mm.

**B. Turf Establishment With No Topsoil/On Subsoil.** The Contractor shall spread 50 mm of Compost Type A, D or E within the limits shown in the contract documents and tilled into subsoil to a minimum depth of 100 mm.

**C. Turf Establishment With Topsoil.** The Contractor shall mix Compost Type A, D or E with topsoil as specified in the contract documents.

**D. Plant Pits or Beds:** Compost Type A, D or E shall be applied at a ratio of 1 part compost to 5 parts existing soil.

**610-3.08 Mulch for Planting.** The Contractor shall apply mulch consisting of wood chips, pine nuggets or shredded bark to the surface of the beds and tree pit areas in accordance with the contract documents. The Contractor shall apply mulch to a uniform depth of 75 mm over the shrub bed and tree pit areas and 50 mm over groundcover beds. The mulch shall be distributed so as to create a smooth, level cover over the exposed soil. Mulch shall not cover plants or be in contact with tree root flare, tree trunks, and plant stems.

**610-3.09 Permeable Weed Control Landscape Fabric.** Areas where landscape fabric is to be installed shall be smooth, firm, stable and free of rocks, clods, foliage, roots, trash, debris or other material that will prevent the matting from lying in direct contact with the soil surface.

The landscape fabric shall be placed where shown in the contract documents and as required by the manufacturer.

**610-3.10 Watering Vegetation.** The Contractor shall provide water without damage to plants, mulch, stakes, plant saucers, sod or other areas to be watered. Damage resulting from watering operations shall be repaired at no additional cost to the State. Watering shall be applied in accordance with §610-3.03 Turf Establishment, §610-3.04 Wildflower Seeding, §610-3.05 Sod or §611-3.01 General. Watering for existing vegetation shall be as specified in the contract documents.
Watering shall be applied at the following rates:

**A. Turf, Wildflowers, Sod, Planting Beds.** In the absence of 25 mm of rainfall within 5 consecutive calendar days the Contractor shall water all turf, wildflowers, sod and planting beds once a week to a depth of 25 mm.

**B. Trees and Planting Pits.** Between April 1st and November 15th, in the absence of 25 mm of rainfall within 5 consecutive calendar days, the Contractor shall apply water to trees and planting pits once per week, except during July and August, when water shall be applied twice per week, with a minimum of 2 days between applications. Soil saucers or portable drip irrigation systems shall be filled once per watering.

**610-3.11 Weed Removal.** The Contractor shall perform weed removal in accordance with the contract documents. The Contractor shall remove and dispose of weeds including roots prior to flowering and seed formation by manual, chemical or mechanical means. Any method of weed removal that leaves live roots in the soil will not be permitted. An appropriately licensed applicator is required for chemical weed control methods. The Contractor shall ensure the preservation of desirable vegetation. Treatment and removal of invasive species will be paid for separately.

**610-3.12 Mowing.** The schedule may be modified to accommodate prevailing or forecast weather conditions. The Contractor shall be responsible, prior to each mowing, for the removal and disposal of any debris and litter which has accumulated since the last mowing. Care shall be taken to avoid damage to existing plant materials.

**A. Roadside.** The Contractor shall mow all turf establishment areas to a height of 125 mm whenever growth reaches 200 mm for the duration of the contract. Clippings shall be left in place.

**B. Lawns.** The Contractor shall mow all turf establishment areas to a height of 75 mm after initial growth reaches 125 mm, and then mowed to a height of 75 mm whenever a 125 mm height is reached thereafter for the duration of the contract. Clippings shall be mulched in place.

**C. Sod.** The Contractor shall mow all sodded areas to a height of 75 mm after initial growth reaches 125 mm, and then mowed to a height of 75 mm whenever a 125 mm height is reached thereafter for the duration of the contract. Clippings shall be mulched in place.

**610-3.13 Mowing Limits Markers.** The Contractor shall install mowing limit markers plumb to a depth in accordance with the manufacturer’s instruction.

**610-4 METHOD OF MEASUREMENT**

**610-4.01 Topsoil.** The quantity to be measured for payment will be in cubic meters of each type of topsoil measured to the nearest whole cubic meter of topsoil placed, from payment lines shown in the contract documents.

Cross sectioning, for the purpose of determining quantities for payment, will be employed only where payment lines are not shown on the Plans and cannot be reasonably established by the Engineer.

**610-4.02 Preparation of Subsoil for Turf Establishment.** The quantity to be measured for payment will be in square meters on slope to the nearest whole square meter of subsoil area prepared for turf establishment.

**610-4.03 Turf Establishment.** The quantity to be measured for payment will be in square meters on slope to the nearest whole square meter of turf established.
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610-4.04 Wildflower Seeding. The quantity to be measured for payment will be in square meters on slope to the nearest whole square meter of wildflower seeding.

610-4.05 Sod. The quantity to be measured for payment will be in square meters on slope to the nearest whole square meter of sod placed.

610-4.06 Soil Amendments. The quantity to be measured for payment will be in kilograms to the nearest whole kilogram or in liters to the nearest whole liter of soil amendments (fertilizer, limestone, mycorrhizal fungi, sulfur and/or moisture retention additive) applied.

610-4.07 Compost. The quantity to be measured for payment will be in cubic meters to the nearest whole cubic meter of compost placed or incorporated.

610-4.08 Mulch for Planting. The quantity to be measured for payment will be in cubic meters to the nearest whole cubic meter of mulch placed.

610-4.09 Permeable Weed Control Landscape Fabric. The quantity to be measured for payment will be in square meters on slope to the nearest whole square meter.

610-4.10 Watering Vegetation. The quantity to be measured for payment will be in kiloliters (kL) to the nearest kiloliter (kL) of water applied, determined from approved measuring devices, or by measurement in tanks or containers of known capacity.

610-4.11 Weed Removal. The quantity to be measured for payment will be in square meters on slope weeded per occurrence to the nearest whole square meter.

610-4.12 Mowing. The quantity to be measured for payment will be the number of square meters on slope mowed per occurrence to the nearest whole square meter.

610-4.13 Mowing Limits Markers. The quantity to be measured for payment will be by the number of complete markers satisfactorily installed.

610-5 BASIS OF PAYMENT

610-5.01 Topsoil. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work, including the handling, storing, stockpiling, and placement.

610-5.02 Preparation of Subsoil for Turf Establishment. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

610-5.03 Turf Establishment. The unit price bid shall include the cost of all labor, materials and equipment including initial water, mulch and mulch anchorage as necessary to satisfactorily complete the work.

610-5.04 Wildflower Seeding. The unit price bid shall include the cost of all labor, materials and equipment including initial water, mulch and mulch anchorage necessary to satisfactorily complete the work.

610-5.05 Sod. The unit price bid shall include the cost of all labor, materials and equipment including initial water, necessary to complete the work. Topsoil bed placed under the sod shall be paid for separately.

610-5.06 Soil Amendments. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work, including water for hydraulic application.
610-5.07 Compost. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

610-5.08 Mulch for Planting. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

610-5.09 Permeable Weed Control Landscape Fabric. The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

610-5.10 Watering Vegetation. The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

610-5.11 Weed Removal. The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

610-5.12 Mowing. The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

610-5.13 Mowing Limits Markers. The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

Payment will be made under:

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<th>Item</th>
<th>Pay Unit</th>
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<td>610.0502</td>
<td>Fertilizer</td>
<td>Liter</td>
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<td>610.06</td>
<td>Limestone</td>
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<td>Mycorrhizal Fungi</td>
<td>Kilogram</td>
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<td>610.0702</td>
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<td>610.08</td>
<td>Moisture Retention Additive</td>
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<td>Mulch for Planting – USDA-APHIS Protocol Wood Chips</td>
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<td>Mulch for Planting Type E – Pine Nugget</td>
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<td>Topsoil – Lawns</td>
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<td>Topsoil – Special Planting Mix</td>
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<td>Topsoil – On-Site Wetland Materials</td>
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<td>Preparation of Subsoil for Turf Establishment</td>
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<td>Wildflower Seeding</td>
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<td>Sodding</td>
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<td>610.21</td>
<td>Mowing</td>
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</tr>
</tbody>
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SECTION 611 – PLANTING, TRANSPLANTING AND POST PLANTING CARE

611-1 DESCRIPTION.

611-1.01 General. Vacant

611-1.02 Planting. This work consists of furnishing, and planting trees, shrubs, vines, groundcovers and other plants in accordance with the contract documents and as directed by the Engineer.

611-1.03 Transplanting. This work consists of transplanting existing plants from existing locations to new locations in accordance with the contract documents and as directed by the Engineer.

610.04 Portable Drip Irrigation System. This work shall consist of furnishing, delivering, placing and removing Portable Drip Irrigation System (PDIS) for watering around newly planted trees and other vegetation in accordance with the contract documents and as directed by the Engineer.

611-1.05 Post-Planting Care. This work consists of the care of newly planted and transplanted trees, shrubs, vines, groundcovers and other plants in accordance with the contract documents and as directed by the Engineer.

611-1.06 Rodent Guards. This work shall consist of furnishing, delivering and placing rodent guards around newly planted trees and other vegetation in accordance with the contract documents and as directed by the Engineer.

611-2 MATERIALS

611-2.01 General. Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Water 712-01
Topsoil 713-01
Mulch for Landscape Bedding 713-05
Materials for the Protection of Plants 713-08
Compost 713-15

611-2.02 Planting. Trees, shrubs, vines, groundcovers and other plants shall be as specified under §713-06 and as further specified in the contract documents.

611-2.03 Transplanting. Plants shall be existing plants in accordance with §713-06.

611-2.04 Portable Drip Irrigation System. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing. Materials may be new or previously used that meet the following material requirements.

Materials for the Protection of Plants 713-08

611-2.05 Post Planting Care. Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Pesticides 713-13

611-2.06 Rodent Guards. Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.
**611-3 CONSTRUCTION**

**611-3.01 General.** Locations for plants shall be as specified in the contract documents. All plants for planting and transplanting shall be protected from damage and drying out, including during transportation, handling or while in temporary storage. No planting or transplanting shall be done when the soil is frozen, saturated (except in wetland conditions) or otherwise in an unsatisfactory condition for working. Planting seasons represent average times of suitable conditions between weather extremes. In general, planting or transplanting shall occur during these seasons. The Contractor may request an extension of the planting seasons.

### TABLE 611-1 PLANTING SEASONS

<table>
<thead>
<tr>
<th>Geographic locations (NYSDOT Regions and Counties)</th>
<th>Spring</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>(USDA 6b-7a) R10, 11- All counties</td>
<td>Evergreen B&amp;B 3/1-5/15 3/1 – 5/31</td>
<td>8/15-10/31 10/1-12/15 8/15-12/15</td>
</tr>
<tr>
<td>All Locations</td>
<td>Bare Root stock shall be planted while dormant</td>
<td></td>
</tr>
</tbody>
</table>

Locations for plants and outlines of areas to be planted shall be staked or marked out on the ground by the Contractor and approved by the Engineer before any plant pits or plant beds are dug. Where nonmovable underground obstructions are encountered, the plant pits shall be relocated as approved by the Engineer.

Existing vegetation shall be removed from all new planting beds.

Where an impervious layer of soil (hardpan, fragipan and soils with greater than 20% clay content) is encountered during the excavation of plant pits or beds, all such soil shall be removed up to a depth of
LANDSCAPE DEVELOPMENT

300 mm beyond required plant pit depth in order to provide adequate drainage for the plant. The pits or beds shall be backfilled with topsoil. Any additional excavation required to properly plant or transplant in impervious soils will be considered extra work.

Planting soil shall be unamended existing soil excavated from the plant pit unless otherwise specified. Watering shall accompany backfilling of plant. The Contractor shall perform the initial watering for backfilling plant so that no voids occur in the plant pit.

No tree shall be staked, guyed or anchored unless otherwise specified in the contract documents.

Mulch shall Type A or B unless otherwise specified in the contract documents and shall be placed at the time of planting or transplanting.

The Contractor shall water, weed and maintain mulch at no cost to the state until the newly planted or transplanted material is accepted.

Plants will be accepted when all specified plants meet the following conditions:

- Species has been verified and plant is in its designated location
- Planted or transplanted in accordance with ANSI A 300, Part 1, 2, 3 and 6 Standard Practices
- Planted or transplanted in accordance with 611 Standard sheets
- living, healthy, unimpaired and in an undamaged condition

Watering, if specified, shall begin upon acceptance of the planting or transplanting and unless otherwise specified continue for one year or the duration of the contract, which ever is later. Watering after acceptance shall be performed as required in Section 610-3.09 Watering Vegetation and paid for separately. Installation of rodent guards if specified are paid for separately.

Plants that die after acceptance at any time during the contract duration shall be removed and unless otherwise specified, the surface area shall be restored to the condition of the adjacent surface at no additional cost to the state.

611-3.02 Planting. The Contractor shall notify the Engineer at least four calendar days before intended delivery of plants or planting materials to the site. The Contractor shall furnish the Engineer legible copies of the certificates of inspection of plant materials and documentation for each shipment showing point of origin, sizes, scientific names, quantities, and kinds of materials supplied.

Planting shall be in accordance with ANSI A300 Part 1, 2 and 3 Standard Practices.

Pruning at the time of planting shall be limited to the removal of dead, conflicting and broken branches; and to other pruning consistent with good horticultural practice in accordance with ANSI A300 Part 1 Standard Practices.

611-3.03 Transplanting. Transplanting shall be in accordance with ANSI A300 Part 1, 2, 3 and 6 Standard Practices and accomplished by a digging method intended to preserve the root system intact to the extent practicable. Planting soil shall be unamended existing soil excavated from the plant pit unless otherwise specified. Transplanted stock shall be pruned prior to transplanting in accordance with ANSI A300 Part 1 Standard Practices.

The Contractor shall take appropriate measures to avoid damage to plant during the transplanting operation including:

1. Provide trunk and branch Protection.
2. Treat plant with an anti-desiccant prior to being dug up
3. Protect all roots from drying out.
4. Prune damaged plant roots greater than 25 mm in diameter

Plants shall be set in a vertical position.

Where the contract duration allows plants greater than 150 mm DBH shall be root pruned up to one year prior to transplanting.

611-3.04 Portable Drip Irrigation System (PDIS). After the requirements for planting under Section 611 Planting, Transplanting and Post Planting Care are completed; the Contractor shall supply and install the required number and size of PDIS as recommended by the manufacturer for the trees planted.
Watering shall be performed as required in Section 610-3.09 Watering Vegetation and paid for separately. All PDIS that are damaged and or missing shall be replaced at no added cost to the State.

The Contractor shall remove PDIS in the fall prior to the first frost. The PDIS shall remain the property of the Contractor.

611-3.05 Post-Planting Care. If specified, the Contractor shall care for planting as needed for one year following the satisfactory completion of all of the planting and/or transplanting or for the duration of the contract, which ever is later. The contractor shall prepare and submit a post-planting care work schedule for approval.

Post-planting care shall consist of:
1. Mulching – with materials to match those used in initial planting, twice to maintain a depth of 75 mm.
2. Weeding - twice
3. Integrated vegetation and pest management- in the event of threat of serious damage from insects or diseases the plants shall be treated by preventative or remedial measures.
4. Pruning (ANSI A300 Part 1) - once to prune dead or damaged branches.
5. Maintenance/Replacement/of tree support system if present – once every six months
6. Removal of tree support system if present at the end of the post-planting care period.
7. Removal of rodent guards if present at the end of the post-planting care period

611-3.06 Rodent Guards. Vacant

611-4 METHOD OF MEASUREMENT.

611-4.01 Planting. The quantity to be measured for payment will be the number of plants placed.

611-4.02 Transplanting. The quantity to be measured for payment will be the number of plants placed.

611-4.03 Portable Drip Irrigation System (PDIS). The quantity of PDIS to be measured for payment will be the number of PDIS placed.

The quantity of Removal of Portable Drip Irrigation System to be measured for payment will be the number of PDIS removed.

611-4.04 Post-Planting Care. The quantity to be measured for payment will be the number of plants cared for or nearest whole square meter on slope of plants cared for.

611-4.05 Rodent Guards. The quantity to be measured for payment will be the number of rodent guards placed.

611-5 BASIS OF PAYMENT.

611-5.01 Planting. The unit price bid for each plant shall include the cost of all labor, materials, and equipment, including initial watering and mulch, compost, plants and plant protection materials and topsoil necessary to satisfactorily complete the work.

611-5.02 Transplanting. The unit price bid for each plant shall include the cost of all labor, materials, and equipment, including initial watering, mulch, compost, plant and plant protection materials and topsoil necessary to satisfactorily complete the work.

611-5.03 Portable Drip Irrigation System. The unit price bid shall include the cost of all labor, materials, and equipment, necessary to satisfactorily complete the work.

611-5.04 Post-Planting Care. The unit price bid for each plant shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work. Progress payments for work
LANDSCAPE DEVELOPMENT

satisfactorily performed may be paid at the mid point of the post-planting care in amounts not to exceed forty percent (40%) of the unit price bid for the respective work.

611-5.05 Rodent Guards. The unit price bid shall include the cost of all labor, materials, and equipment, necessary to satisfactorily complete the work.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Description</th>
<th>Pay Unit</th>
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<td>Planting - Evergreen Shrubs – 380 mm Height/Spread</td>
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<td>Planting - Evergreen Shrubs – 1.50 M Height/Spread</td>
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</tbody>
</table>
LANDSCAPE DEVELOPMENT

x = Root Specification
1 = Ball & Burlap, Field Potted or Field Boxed, 2 = Container or Box Grown,
3 = Bare Root, 4 = In Ground Fabric Bag Grown

611.061y  Planting – Vines, Groundcovers – As Specified Each
611.062y  Planting – Vines, Groundcovers – Number SP3 Container Each
611.063y  Planting – Vines, Groundcovers – Number SP4 Container Each
611.064y  Planting – Vines, Groundcovers – Number SP5 Container Each
611.065y  Planting – Vines, Groundcovers – Number 1 Container Each
611.066y  Planting – Vines, Groundcovers – Number 2 Container Each
611.071y  Planting - Herbaceous Plants – As Specified Each
611.072y  Planting - Herbaceous Plants – Number SP4 Container Each
611.073y  Planting - Herbaceous Plants – Number SP5 Container Each
611.074y  Planting - Herbaceous Plants – Number 1 Container Each
611.075y  Planting - Herbaceous Plants – Number 2 Container Each

y = Type Specification
1 = Container Grown, 2 = Bare Root
3 = Field Potted,

611.10  Transplanting 0 to 1.20 M in height Each
611.11  Transplanting over 1.20 M to 1.80 M in height Each
611.12  Transplanting, over 19 mm to 75 mm Diameter at Breast Height Each
611.13  Transplanting, over 75 mm to 150 mm Diameter at Breast Height Each
611.14  Transplanting over 150 mm to 300 mm Diameter at Breast Height Each
611.15  Transplanting Vines, Groundcovers, Each
611.16  Transplanting Herbaceous Plants Each
611.17  Portable Drip Irrigation System Each
611.18  Removal of Portable Drip Irrigation System Each
611.19  Post-Planting Care Each
611.20  Post-Planting Care Square Meter
611.21  Rodent Guard Each

Refer to the Contract Proposal for full item number and full description

SECTION 612 – (VACANT)

SECTION 613 (VACANT)
LANDSCAPE DEVELOPMENT
SECTION 614 - PRUNING, IMPROVING AND REMOVING EXISTING VEGETATION

614-1 DESCRIPTION.

614-1.01 Pruning Existing Trees. This work shall consist of pruning existing trees as shown in the contract documents and as directed by the Engineer.

614-1.02 Improvement of Vegetated Areas. This work shall consist of cutting, disposing of all wood and debris, stump removal, or mechanical or chemical treatment of specified trees and woody vegetation within the area shown in the contract documents and as directed by the Engineer.

614-1.03 Tree Removal. The work shall consist of felling trees over 100 mm in diameter at breast height, disposing of all wood and debris, and may require topping, stump removal and other work as shown in the contract documents and as directed by the Engineer.

614-1.04 Existing Stump Removal. The work shall consist of removing existing stumps, disposing of all wood and debris, as shown in the contract documents and as directed by the Engineer.

614-1.05 Tree Root Zone Treatment (Vertical Mulching/Aeration). This work shall consist of treating the root zone of trees through aeration and/or mulching of the roots as shown in the contract documents and as directed by the Engineer.

614-1.06 Tree Root Pruning. This work shall consist of cleanly pruning, existing tree roots severed during construction operations, typically related to linear excavation, as shown in the contract documents and as directed by the Engineer.

614-2 MATERIALS

614-2.01 Pruning Existing Trees. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Water 712-01

614-2.02 Improvement of Vegetated Areas. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Topsoil 713-01
Pesticides 713-13

614-2.03 Tree Removal. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Topsoil 713-01

614-2.04 Existing Stump Removal. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Topsoil 713-01

614-2.05 Tree Root Zone Treatment (Vertical Mulching/Aeration). The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

Mortar Sand 703-03
Mycorrhizal Fungi 713-09
Compost 713-15

614-2.06 Tree Root Pruning. The materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.
614-3 Construction Details

614-3.01 Pruning Existing Trees

A. Equipment. Workers shall employ accepted tree climbing methods, and shall not climb trees with climbing spurs. All tools used and methods employed in accordance ANSI A300 Part 1 Standard Practices, except that no anvil type pruners will be permitted. The cutting surfaces of all tools, ladders, ropes, soles of workers shoes and other objects coming into contact with the tree shall be disinfected with a 2% bleach solution and dried completely prior to the start of any work on a tree to prevent the spread of plant diseases.

B. Pruning. Pruning shall be in accordance ANSI A300 Part 1 Standard Practices. When specified the quantity of trees as shown in the contract documents shall be pruned so the resulting crown retains the growth habit of the tree species. Any and all branches interfering with or hindering the healthy growth of the tree shall be removed. All diseased branches and all dead branches 25 mm or more in diameter shall be removed. Any branch which may be partly dead, yet has a healthy lateral branch at least one-third the diameter of the parent branch shall be removed beyond the healthy branch. All stubs or improper cuts resulting from former pruning shall be removed. All cuts shall be cleanly made with sharp tools as close to the parent trunk or limb as possible without disturbing the branch bark ridge or callus collar. All existing nails, spikes, wire, plastic or other materials found driven into or fastened to the trunk or branches shall be removed or if approved they shall be cut flush in a manner to permit complete healing over.

614-3.02 Improvement of Vegetated Areas. All trees and shrubs specified for removal will be designated by the Engineer either by separate marking, marking in sample areas, or otherwise. Unless otherwise specified, all stumps shall be cut to a height of about 150 mm above the ground. Unless otherwise specified, an approved herbicide shall be applied to all live stumps in accordance with the manufacturer's recommendations. An approved dye shall be added to the herbicide mixture to identify treated stumps and stubble. Where stump removal is specified, all stump holes shall be backfilled with topsoil, unless otherwise specified in the contract documents, and backfill shall be compacted. Unless otherwise specified in the contract documents, grass shall be established on stump holes and will be paid for separately.

Care shall be taken in the felling of trees and the operation of equipment to prevent injury to trees and shrubs which are to be preserved. All injuries to the limbs, bark and roots of such plants shall be repaired in accordance with ANSI A300 Part 1 Standard Practices Pruning and ANSI Z133.1 Arboricultural Operations Safety.

Improvement of vegetated areas shall be completed in any area before any planting, seeding or other landscape work is begun in that area unless otherwise approved.

All wood, stumps, brush and other debris resulting from the work shall be disposed of as specified in Section 201 Clearing and Grubbing.

614-3.03 Tree Removal. No tree shown in the contract documents or listed for removal shall be cut until it is approved by the Engineer. The contractor shall be responsible to coordinate all work involving utilities with the respective utility company. All trees shall be topped and limbed before felling unless otherwise approved. All injuries to the limbs, bark and roots of plants to remain shall be repaired in accordance with ANSI A300 Standard Practices Pruning and ANSI Z133.1 Arboricultural Operations Safety.

The Contractor shall field measure all trees at 1.40 M above the ground, commonly referred to as Diameter Breast Height (DBH) before they are cut.

Stumps of trees removed under this item for removal shall be grubbed, cut, ground to the depth of 150 mm below grade or as specified in the contract documents. All stump holes shall be backfilled with
topsoil, unless otherwise specified in the contract documents and backfill shall be compacted. Unless otherwise specified in the contract documents, grass shall be established on stump holes and will be paid for separately.

614-3.04 Existing Stump Removal. Existing stumps listed for removal in the contract documents shall be ground to the depth of 150 mm below grade unless otherwise specified in the contract documents. Stumps shall include all visible wood and roots. Backfill to finished grade with topsoil, unless otherwise specified in the contract documents. The backfill shall be compacted. Unless otherwise specified in the contract documents, grass shall be established on stump holes and will be paid for separately.

614-3.05 Tree Root Zone Treatment (Vertical Mulching/Aeration). Locations of work shall include areas within the dripline or wider root zone of existing trees to be preserved as shown on the contract documents.

Appropriate drilling tools shall be used for drilling of holes for root zone restoration. Drilling equipment shall be hand held or light weight devices (no heavy machinery) so as to avoid further impact to tree roots through compaction.

Holes shall be drilled and existing soil removed within a zone beginning 75 mm from the trunk of the specified tree and extending to its dripline on an approximately 0.6 M x 0.6 M grid. Dimensions of holes or drill size shall be approximately 50 mm in diameter and a minimum of 300 mm deep. Efforts should be made to minimize drilling through large tree roots (especially near the trunk). When woody roots are encountered, the drill hole shall be moved to avoid root damage.

The hole shall be completely filled to original grade as follows:

Method 1: with mortar sand
Method 2: with mortar sand amended with Mycorrhizal Fungi.
Method 3: with compost.
Method 4: with compost amended with Mycorrhizal Fungi.

When mycorrhizal fungi are specified, they shall be a dry granular powder specifically designed for vertical mulching applications. Apply in accordance with the manufacturer’s recommendations at a rate of 0.09 kilograms per hole or when pre-mixed in bulk 3.0 kilograms per cubic meter of sand or compost.

614-3.06 Tree Root Pruning. Existing tree roots greater than 25 mm in diameter, measured at the edge of excavation, shall be pruned within 24 hours of the time they have been damaged by construction activity. The severed root shall be pruned at the edge of excavation, or 25 mm beyond the entire damaged portion of the tree root if damaged root extends beyond the edge of excavation into undisturbed soil. Pruning shall be in accordance with ANSI A300 Part 1 Standard Practices Pruning and ANSI Z133.1 Arboricultural Operations Safety. All cuts shall be cleanly made with sharp tools. The cutting surfaces of all tools, ladders, ropes, soles of workers shoes and other objects coming into contact with the tree roots shall be washed with a disinfectant at the start of any work on a tree to prevent the spread of plant diseases.

The excavated area around the existing tree roots shall be backfilled as soon as construction activities permit with the specified or approved materials. If the excavated area around the existing tree roots is not backfilled within 24 hours, all roots shall be kept moist, to prevent dessication.

614-4 METHOD OF MEASUREMENT

614-4.01 Pruning Existing Trees. The quantity to be measured for payment will be the number of trees pruned.

614-4.02 Improvement of Vegetated Areas. The quantity to be measured for payment will be in square meters measured to the nearest whole square meter of area improved.
614-4.03 Tree Removal. The quantity to be measured for payment will be the number of trees, including their stumps if specified.

614-4.04 Pre-Existing Stump Removal. The quantity to be measured for payment will be the number of pre-existing stumps removed.

614-4.05 Tree Root Zone Treatment (Vertical Mulching/Aeration). The quantity to be measured for payment will be in square meters treated within the zone, measured to the nearest square meter.

614-4.06 Tree Root Pruning. The quantity to be measured for payment will be in meters to the nearest whole meter, along excavation line.

614-5 BASIS OF PAYMENT

614-5.01 Pruning Existing Trees. The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

614-5.02 Improvement of Vegetated Areas. The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

614-5.03 Tree Removal. The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

When trees are specified in the contract documents for removal, payment for each tree removal will include removal of the stump.

614-5.04 Existing Stump Removal. The unit price bid shall include the cost of labor, materials, and equipment necessary to satisfactorily complete the work.

614-5.05 Tree Root Zone Treatment. The unit price bid shall include the cost of labor, materials, equipment and incidentals necessary to complete the work. Mycorrhizal Fungi and mulch will be paid for separately.

614-5.06 Tree Root Pruning. The unit price bid shall include the cost of labor, materials, equipment and incidentals necessary to complete the work.

Payment will be made under:

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<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
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<td>Care of Trees up to 300 mm Diam. at Breast Height – Pruning</td>
<td>Each</td>
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<tr>
<td>614.0421</td>
<td>Care of Trees Over 300 mm to 600 mm Diam. at Breast Height - Pruning</td>
<td>Each</td>
</tr>
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<td>614.0431</td>
<td>Care of Trees Over 600 mm to 900 mm Diam. at Breast Height - Pruning</td>
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<td>Improvement of Vegetated Areas</td>
<td>Square Meter</td>
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<td>614.0608nn</td>
<td>Tree Removal Over 1500 mm to 1800 mm at Breast Height</td>
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</table>
LANDSCAPE DEVELOPMENT

nn = Stump Treatment
01 = Stumps Cut to Above Grade, 02 = Stumps Cut Flush,
03 = Stumps Cut to Below Grade, 04 = Stumps Grubbed

614.0701 Pre-Existing Stump Removal up to 600 mm diameter at 150 mm above grade Each
614.0702 Pre-Existing Stump Removal over 600 mm to 1200 mm diameter at 150 mm above grade Each
614.0703 Pre-Existing Stump Removal over 1200 mm diameter at 150 mm above grade Each
614.08 Tree Root Zone Treatment (Vertical Mulching/Aeration) Square Meter
614.09 Tree Root Pruning Meter

SECTION 615 LANDSCAPE APPURTENANCES

615-1 DESCRIPTION. The work in this section shall include all work required for furnishing, placing,
and/or special construction of landscape appurtenances.

615-2 MATERIALS. As specified in the special specifications.

615-3 CONSTRUCTION DETAILS. As specified in the special specifications.

615-4 METHOD OF MEASUREMENT. As specified in the special specifications.

615-5 BASIS OF PAYMENT. As specified in the special specifications.
LANDSCAPE DEVELOPMENT MATERIALS

Make the following changes to the Standard Specifications dated May 4, 2006. Pages 852 to 864, Delete Section 713 in its entirety and Replace it with the following:

SECTION 713 - LANDSCAPE DEVELOPMENT MATERIALS

713-01 TOPSOIL

SCOPE. This specification covers the material requirements for topsoil for use in turf establishment, wildflower seeding, sodding, and planting.

MATERIAL REQUIREMENTS. Topsoil may be naturally occurring or may be manufactured. If naturally occurring topsoil exists on the site it shall be the surface layer of soil at a depth specified in the contract documents or approved by the engineer.

Manufactured topsoil is a mixture of materials comprised of a mineral(soil) component that by itself does not exhibit the properties and characteristics of topsoil, an organic material component consisting of compost(s) meeting the requirements of §713-15 Compost, and amendment(s), such as limestone meeting the requirements of §713-02 Limestone that, when combined together, meet the requirements for topsoil. For manufactured topsoil the contractor shall thoroughly mix the organic portion with the granular portion under dry conditions.

Topsoil shall be free from refuse, material toxic or otherwise deleterious to plant growth, subsoil, sod clumps, seeds or other viable propagules of invasive plants, woody vegetation and stumps, roots, brush, refuse, stones, clay lumps, or similar objects. Construction and demolition debris as classified under 6 NYCRR Part 360, other than uncontaminated land clearing debris, shall not be used to manufacture or amend topsoil. Sod and herbaceous growth such as grass and non-invasive weeds need not be removed but shall be thoroughly broken up and mixed with the soil during handling or manufacturing operations.

A. Topsoil-Reuse of On-Site Materials. Existing topsoil stripped and reclaimed in accordance with Section 203 Excavation and Embankment taken from sites within the contract limits. The general limits and depth of the material to be utilized for topsoil will be indicated in the Contract documents. Where no depth is indicated it shall be 150 mm. Topsoil shall be stored on site. Based on visual inspection by the Engineer, topsoil may require screening to meet this requirement.

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<th>Percent Passing by Weight</th>
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<tr>
<td>25 mm</td>
<td>85 to 100</td>
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B. Manufactured or Offsite Materials.

1. Topsoil -Roadside
   - The pH of the material shall be between 5.5 and 7.6.
   - The organic content shall be not less than 3% or more than 8%

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<th>Percent Passing by Weight</th>
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<td>75 µm</td>
<td>20 to 65</td>
</tr>
<tr>
<td>2 µm</td>
<td>0 to 20</td>
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</tbody>
</table>
2. **Topsoil - Lawn**  
- The pH of the material shall be between 5.5 and 7.6.  
- The organic content shall be not less than 6% or more than 12%.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 mm</td>
<td>100</td>
</tr>
<tr>
<td>No. 10</td>
<td>90 to 100</td>
</tr>
<tr>
<td>No. 40</td>
<td>45 to 80</td>
</tr>
<tr>
<td>No. 200</td>
<td>25 to 70</td>
</tr>
<tr>
<td>2 Micron</td>
<td>5 to 35</td>
</tr>
</tbody>
</table>

3. **Topsoil - Special Planting Mix**  
- The pH of the material shall be between 5.5 and 7.0.  
- The organic content shall be not less than 10% or more than 15%.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 mm</td>
<td>100</td>
</tr>
<tr>
<td>25 mm</td>
<td>85 to 100</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>65 to 100</td>
</tr>
<tr>
<td>No. 200</td>
<td>20 to 40</td>
</tr>
<tr>
<td>2 Micron</td>
<td>5 to 35</td>
</tr>
</tbody>
</table>

4. **Topsoil - Acidic**  
- The pH of the material shall be between 4.8 and 6.0.  
- The organic content shall be not less than 6% or more than 15%.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 mm</td>
<td>100</td>
</tr>
<tr>
<td>No. 10</td>
<td>90 to 100</td>
</tr>
<tr>
<td>No. 40</td>
<td>25 to 70</td>
</tr>
<tr>
<td>No. 200</td>
<td>5 to 10</td>
</tr>
<tr>
<td>2 Micron</td>
<td>5 to 35</td>
</tr>
</tbody>
</table>

**C. Topsoil - Wetland**

1. **Topsoil - On-Site Wetland Materials.** Existing wetland soil stripped and reclaimed from existing impacted delineated wetlands sites in accordance Section 203 *Excavation and Embankment* taken from within the contract limits and to the depth specified in the contract documents. This wetland soil shall be exempt from the Sampling & Testing requirements.

2. **Topsoil - Offsite or Manufactured Wetland Materials.** These materials shall meet the following requirements:  
The pH of the material shall be between 5.0 and 7.0.  
The organic content shall be not less than 15% or more than 20% dry weight basis and be comprised of leaf or well rotted manure compost meeting the requirements of §713-15 *Compost.*  
Granular material shall be naturally occurring mineral soil.
LANDSCAPE DEVELOPMENT MATERIALS

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 16</td>
<td>100</td>
</tr>
<tr>
<td>No. 40</td>
<td>85 to 100</td>
</tr>
<tr>
<td>No. 60</td>
<td>40 to 100</td>
</tr>
<tr>
<td>No. 200</td>
<td>5 to 10</td>
</tr>
</tbody>
</table>

The Contractor may amend impacted upland area and manufactured wetland topsoil with approved materials and by approved methods to meet the material requirements.

STOCKPILING, SAMPLING & TESTING.

Topsoil-Reuse of On-Site Materials and Topsoil- On-Site Wetland Materials: Topsoil acquired from sites that are designated in the contract documents are not subject to requirements for stockpiling, sampling, and testing.

Topsoil Types Roadside, Lawns & Special Planting Mix, Acidic, and Topsoil - Manufactured or Offsite Wetland Materials are subject to the requirements for stockpiling, sampling and testing.

Stockpiling. The details for stockpiling methods and requirements may be obtained from the Landscape Architecture Bureau.

Sampling. The details for sampling methods and requirements may be obtained from the Landscape Architecture Bureau.

Samples taken for topsoil amended or manufactured with approved composted biosolids shall be identified as such.

Contractors who believe that an error was made in sampling the topsoil shall, within one work day, indicate the alleged error in writing to the Engineer. The Engineer will respond within 7 calendar days.

TESTING.

Composted Biosolids. Composted biosolids used to amend or manufacture topsoil shall conform to the applicable requirements of §713-15 Compost. Composted biosolids shall require a certificate, from a laboratory approved by the NYS Department of Health, verifying compliance with all applicable laws, rules, and regulations. The certification shall be provided to the Engineer by the Contractor prior to the delivery of any composted biosolids, topsoil containing composted biosolids, or other such regulated material to the contract site. The material shall be approved before it is used.

The Contractor shall have topsoil that has been amended with approved composted biosolids or other such regulated material tested to ensure compliance with the pH organic content, and gradation requirements certified by a nationally recognized entity which provides soils laboratory services and provide the laboratory results to the Engineer.

Topsoil Testing. All other material tests required by this section, will be performed by the Department or its designated representative, in conformance with the procedures contained in the appropriate Department publications or test methods. The details for testing methods and requirements may be obtained from the Materials Bureau.

Stockpiles meeting all requirements for pH, organic and gradation may be accepted and used.

Stockpiles that when tested fail to meet requirements for pH or organic may be amended in place. A stockpile that fails to meet gradation requirements may not be accepted. The Contractor shall provide a plan for amending pH and/or organic to the Engineer certified by a nationally recognized entity which provides soils laboratory services. Once the Department accepts the plan and certification the Contractor may amend the stockpile. Re-testing of the stockpile is not required prior to placing the topsoil materials.

BASIS OF ACCEPTANCE. Topsoil-Reuse of On-Site Materials and Topsoil- On-Site Wetland Materials will be accepted on the basis of a visual inspection.
LANDSCAPE DEVELOPMENT MATERIALS

Topsoil - Roadside, Topsoil – Lawns, Topsoil - Special Planting Mix, Topsoil - Acidic, and Topsoil - Manufactured or Offsite Wetland Materials will be accepted on the basis of the stockpile meeting all the requirements or the stockpile material meeting all gradation requirements and a plan and certification approved by Engineer for amending pH and organic requirements.

713-02 LIMESTONE

SCOPE. This specification covers the material requirements for limestone.

MATERIAL REQUIREMENTS. Limestone shall be ground limestone having a minimum total neutralizing value of 88% calcium carbonate equivalence. A minimum of 90% shall pass the No. 20 sieve and a minimum of 60% shall pass the No. 100 sieve.

PACKAGING. Packaged agricultural limestone packed in the manufacturer's standard containers shall weigh not over 45 kilograms each, with the name of the material, net weight of contents and the manufacturer's name and guaranteed analysis appearing on each container.

BULK DELIVERY. Bulk delivery of limestone shall be accompanied by a certificate providing the names, weight and analysis as specified herein for packaged material.

BASIS OF ACCEPTANCE. Limestone will be accepted on the basis of the manufacturer's label or certificate and visual inspection for compliance with the material requirements.

713-03 FERTILIZER

SCOPE. This specification covers the material requirements for fertilizers.

MATERIAL REQUIREMENTS. Fertilizers may be either fluid or dry formulations of commercial carriers of available plant nutrients. Fertilizers may also be provided in standardized packets designed to control the release of their contents over a specified period of time.

The following mixed commercial fertilizers shall contain total nitrogen, phosphoric acid and soluble potash in the ratios stated:

Type A. 2-1-1 or 3-1-1 (approximate analysis). Minimum of 50% water insoluble nitrogen and with a salt index of less than 50.

Type B. 1-2-1 (approximate analysis) 50 % Organic/IBDU (Isobutydine diurea)/ or coated for slow release with a water in-soluble nitrogen (WIN).

Type C. Nitrate of soda containing a minimum of 16% nitrogen or Ammonium sulfate containing a minimum of 20.5% nitrogen as appropriate to soil conditions.

Type D. Bonemeal shall be commercial steamed bonemeal, finely ground with a minimum of 1.0% nitrogen and a minimum of 20% phosphoric acid.

Type E. 13-0-0 (approximate analysis) shall be a commercial slow release organic nitrogen fertilizer such as blood meal

PACKAGING. Packaged fertilizers shall be in the manufacturer's standard containers or packets. Containers shall weigh not more than 45 kilograms and shall include a label stating the name of the material, the net weight of the contents, the manufacturer's name, and the guaranteed analysis of the fertilizer. Labels on containers of fluid fertilizers shall state the net volume of the container. Packets shall
include a label stating the name of the material, the net weight of the contents, the manufacturer's name, and the guaranteed analysis of the fertilizer.

**BULK DELIVERY.** Bulk delivery of fertilizer shall be accompanied by the manufacturer's certificate stating the name of the manufacturer, the guaranteed analysis and the weight of the shipment. Certificates accompanying bulk deliveries of fluid fertilizers shall also state the net volume of the shipment.

**BASIS OF ACCEPTANCE.** Fertilizer will be accepted on the basis of the manufacturer's label or certificate indicating conformance with this specification and visual inspection. Material that has become caked or otherwise damaged will be rejected.

**713-04 SEEDS**

**SCOPE.** This specification covers the material requirements for seeds for grasses, legumes, wildflowers and cereals.

**MATERIAL REQUIREMENTS.** All species and their cultivars or varieties must be disease and insect resistant, not considered noxious or invasive, guaranteed hardy and adapted for the locality, and among the top 25% of commercially-available seed types as rated by NTEP (National Turfgrass Evaluation Program). Cultivars infected with non-pathogenic (non-disease causing) fungal endophytes are preferred, if available. Experimental varieties should be excluded.

Material other than pure live seed shall comprise only nonviable seed, chaff, hulls, live seed of crop plants other than those specified, harmless inert matter and non-noxious, non-invasive weed species seeds. Non-noxious, non-invasive species weed seeds will be permitted up to 1% of the gross weight of each seed mixture.

Seeding mixtures shall be composed of perennial (except for annual rye) grasses suited to the site conditions, use, soils, moisture and local climate. All seeds of leguminous plants requiring inoculation shall be inoculated prior to mixing or sowing unless otherwise specified or approved or unless accompanied by a certificate of preinoculation. The Contractor may propose a dormant seed additive for cold weather seeding at no additional cost to the state. The Contractor may propose an alternate range for a component of a given mix based on regional and commercial availability.

### A. General Roadside seed mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Fescue (2 varieties min. must include creeping red)</td>
<td>Festuca rubra var.</td>
<td>Commercial</td>
<td>50-70</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>15-40</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>Lolium multiflorum</td>
<td>Commercial</td>
<td>5-15</td>
</tr>
<tr>
<td>Clover (White preferred)</td>
<td>Trifolium repens</td>
<td>Commercial</td>
<td>5-10</td>
</tr>
</tbody>
</table>

### B. Restoration/High-traffic seed mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky Bluegrass (2 var. min.)</td>
<td>Poa pratensis</td>
<td>Commercial</td>
<td>5-20</td>
</tr>
<tr>
<td>Fine Fescue (2 var. min.; must include creeping red)</td>
<td>Festuca rubra var.</td>
<td>Commercial</td>
<td>15-40</td>
</tr>
<tr>
<td>Tall Fescue (2 var. min.)</td>
<td>Festuca arundinacea</td>
<td>Commercial “turf” type</td>
<td>25-50</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>10-30</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>Lolium multiflorum</td>
<td>Commercial</td>
<td>5-15</td>
</tr>
<tr>
<td>Ticklegrass (or, if unavailable, Redtop)</td>
<td>Agrostis scabra (or Agrostis alba)</td>
<td>Commercial</td>
<td>0-15</td>
</tr>
<tr>
<td>Clover (White preferred)</td>
<td>Trifolium repens</td>
<td>Commercial</td>
<td>0-5</td>
</tr>
</tbody>
</table>
**C. Lawn Seed Mix**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky Bluegrass (3 var. min.)</td>
<td>Poa pratensis</td>
<td>Commercial</td>
<td>15-40</td>
</tr>
<tr>
<td>Fine Fescue (2 var. min. must include creeping red)</td>
<td>Festuca rubra var.</td>
<td>Commercial</td>
<td>30-50</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>15-40</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>Lolium multiflorum</td>
<td>Commercial</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**D. Salt-Tolerant Seed Mix**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Percent by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Fescue (must include creeping red and hard fescue)</td>
<td>Festuca rubra var. &amp; Festuca longifolia*</td>
<td>Commercial</td>
<td>10-25</td>
</tr>
<tr>
<td>Perennial Ryegrass (2 var. min.)</td>
<td>Lolium perenne</td>
<td>Commercial “turf” type</td>
<td>10-40</td>
</tr>
<tr>
<td>Tall Fescue (2 var. min., selected for maximum salt tolerance)</td>
<td>Festuca arundinacea</td>
<td>Commercial “turf” type</td>
<td>25-45</td>
</tr>
<tr>
<td>Ticklegrass (or, if unavailable, Redtop)</td>
<td>Agrostis scabra (or Agrostis alba)</td>
<td>Commercial</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkaligrass (weeping preferred)</td>
<td>Puccinellia distans</td>
<td>Commercial</td>
<td>15-40</td>
</tr>
</tbody>
</table>

*aka. F. trachyphylla Krajina; F. brevipila Tracey

**Wildflower Seed Mix.** Wildflower seed mix shall be as specified in contract documents

**Nomenclature.** The common and scientific names of grasses, legumes, wildflowers and cereals specified in the contract documents shall conform to one or more of the authorities on botanical nomenclature recognized by the American Association of Nurserymen.

**Stratification.** Seeds in Wildflower Seed Mixes that require cold and/or warm stratification in order to germinate shall be prepared prior to sowing or used only in fall planting mixes.

**Legume Inoculants.** Legume seeds requiring inoculation shall be accompanied by adequate amounts of their proper inoculants unless accompanied by certification of preinoculation. Inoculants for treating legume seeds shall be a standard culture of nitrogen fixing bacteria that is not more than one year old. Each inoculant shall be the specific culture required for each legume. Inoculants shall be supplied only from suppliers licensed by the Department of Agriculture and Markets to sell legume inoculants in New York State.

**PACKAGING.** Seeds shall be furnished and delivered in labeled containers or bags that are acceptably sealed or sewn tight. All seed and seed labels shall be in accordance with Agriculture and Markets Law. Container or bag labels shall not be removed prior to the time of sowing nor shall container labels be altered, obliterated or otherwise illegible.

When seeds are to be accepted by certification, they may be mixed prior to delivery. The certification shall consist of the label that shall be attached to each container of seed in accordance with the provisions of the Agriculture and Markets Law. Seeds will not be accepted by certification unless the test dates shown on the seed container labels are within the twelve months prior to the date that the seeds are sown.

Seeds shall be furnished damage free, with no mold, rot or deterioration, as a result of handling, transit or storage. After delivery to the Contractor, seed shall be stored so that it is protected from damage or deterioration from any source.

**BASIS OF ACCEPTANCE.** Seeds will be accepted on the basis of the manufacturer's label or certificate indicating conformance with this specification and Agriculture and Markets Law.
713-05 MULCH FOR PLANTING

SCOPE. This specification covers the material requirements for wood and bark chips used as mulch, landscape bedding or erosion control.

MATERIAL REQUIREMENT. Wood and bark chips used for mulch, landscape bedding or erosion control may be the following.

**TYPE A Seasoned Wood Chips.** This shall be derived from 100% first generation hardwood or softwood. The chips shall be seasoned (aged a minimum of 1 year), free from leaves, young growth, unchipped branches, twigs 25 mm or greater in diameter, wood shavings, sawdust or foreign materials such as stones, nails, plastic, etc. Wood chips shall not exceed 75 mm in the greatest dimension.

**TYPE B Recycled or Green Wood Chips.** Shall be wood chips derived from unadulterated construction and/or demolition waste wood. Wood chips derived from construction and/or demolition waste wood shall not be contaminated with paint, chemicals, asphalt shingles, glass, nails, etc. Wood chips shall not exceed 75 mm in the greatest dimension.

**TYPE C USDA-APHIS Protocol Wood Chips.** USDA-APHIS (United States Department of Agriculture- Animal and Plant Health Inspection Service) Protocol wood chips shall be wood chips from current construction activities derived from trees removed and chipped according to USDA-APHIS protocol. Wood is chipped or mulched to less than 25 mm in at least two dimensions or apply an APHIS approved method.

**Type D Shredded Bark Mulch.** Shredded bark mulch shall be commercially available double or triple-processed aged bark mulch made from a mixture of hardwood and/or softwood. It shall be created by regrinding the mulch in a tub grinder and be finely screened to a uniform particle size. It shall be composed of bark and have a low wood content with no hidden woods from construction and demolition debris or pressure treated lumber.

**Type E Pine Bark Chunks or Nuggets.** Pine Bark chunks or nuggets shall be commercially available, manufactured from 100% pine bark and shall not exceed 75 mm.

BASIS OF ACCEPTANCE. Wood and bark chips will be accepted on the basis of visual inspection, upon delivery, for compliance with the materials requirements and applicable certification of compliance with 6 NYCRR Part 360.

Shredded bark mulch will be accepted on the basis of a visual inspection for compliance with the material requirements.

713-06 TREES, SHRUBS AND VINES

SCOPE. This specification covers the material requirements for trees, shrubs, vines, and other plants

MATERIAL REQUIREMENT.

Nomenclature. The common and scientific nomenclature for plants shall be in conformity with the American Nursery and Landscape Association’s American Standard for Nursery Stock (ANSI Z60.1).

Quality and Size. Plants, including root spread and ball size, shall be in accordance with the American Standard for Nursery Stock (ANSI Z60.1). All plants shall have a normal habit of growth and be typically characteristic of their respective kinds. The specified plant sizes shall be the minimum size allowed and shall include plants from that size up to but not including the next larger size. Plants shall not be pruned.
at the time of digging or before delivery and no plants shall be cut back from larger sizes to meet the sizes specified. Plants shall be free from injury, insect damage, infestation and disease. Plants except those for transplanting shall be nursery and/or field grown and shall bear evidence of proper nursery care, including adequate transplanting and root pruning. Containers shall be sufficiently rigid to hold the ball shapes and protect the root balls during handling and shipping. Plants shall have been grown in the container long enough for new fibrous roots to have developed so that the root ball is firm and will retain its shape and hold together when removed from the container. The plants shall be in a healthy growing condition with tops which are of good quality, and shall have been adequately hardened off before shipment. The plants shall have been grown in similar climatic conditions to the planting location.

**Digging Plants.** Digging shall avoid all possible injury to, or loss of roots, but when required, roots cut shall be cleanly cut. No cold storage plants will be accepted unless approved in writing prior to delivery. Plants stored temporarily shall be properly heeled in or otherwise protected from injury.

**Root Protection.** After plants are dug, their roots shall be protected from injury such as caused by heat, sun, wind and freezing temperatures.

**Trees.** Pruning cuts on nursery and/or field grown trees shall be healed over. There shall be no cut back crowns or leaders and no abrasions of the bark. Any stem to rootstock grafts shall be healed. Trees must have good fibrous root systems characteristic of the kind. Deciduous trees shall have normal spread of crowns unless otherwise specified. Bare root trees shall not require earth adhering to the roots except as required under Root Protection above.

Balled and burlapped trees shall be properly dug and protected to preserve the natural earth in contact with the roots. No processed balls will be accepted. The balls shall be of the required size, firmly wrapped and tied with approved materials. No balled plants will be acceptable if the ball is cracked or broken.

The tops of trees shall be well formed structurally, but they are not required to have more than reasonably straight trunks, nor better than average well balanced crowns, nor be of specimen or street tree quality consistent with ANSI Z60.1 unless those requirements are specified on the plans.

**Shrubs.** Shrubs shall have good fibrous root systems. The quality of balled and burlapped shrubs and container grown shrubs shall be as specified in ANSI Z60.1.

**Vines.** Vines shall be as specified in ANSI Z60.1. Vines shall be field grown unless otherwise specified. Pot grown plants shall be vigorous, well-developed plants, well established in pots with sufficient roots to hold the earth intact after removal from containers but they shall not be rootbound.

**Plants for Transplanting.** Plants, including root spread and ball size, shall be in accordance with ANSI Z60.1 for Collected Plant.

**LABELING.** Labeling shall be in accordance with currently accepted nursery labeling practice except that the Contractor shall upon request supply positive identification by genus and species of any plant.

**TRANSPORTATION.** Tarpaulins or other covers shall be placed over plants transported by open vehicles. Closed vehicles shall be ventilated to avoid overheating and the doors shall be kept closed during shipment to prevent plants from drying. The heads of trees shall be tied-in carefully to prevent fracturing or breaking the branches. Trunks and branches shall be adequately supported and padded to avoid scraping or bruising.

**INSPECTION.** The Contractor shall be responsible to supply current, valid certificates of inspection of plant materials which may be required by federal, state, provincial or other authority to accompany shipments of plants.

The Department will identify by suitable non-injurious means such as painting, marking by various methods, etc. all plant material rejected upon delivery to the contract site.
BASIS OF ACCEPTANCE: Acceptance will be based on visual inspection, upon delivery to site, by the Engineer for compliance with the materials requirements.

713-07 ROLLED EROSION CONTROL PRODUCTS AND SOIL STABILIZERS

SCOPE. This specification covers the material requirements for Rolled Erosion Control Products and Soil Stabilizers.

MATERIAL REQUIREMENTS

Class I (Short-Term) Light-duty, organic, or synthetic erosion control products.

Type A. No minimum shear stress is required. The product shall be capable of withstanding moderate foot traffic without tearing or puncturing.

Type B. No minimum shear stress is required.

Type C. Products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 7 kg/m² (kilograms force per square meter) at 13 mm soil loss.

Class II (Intermediate-Term) Erosion control products.

Type A. Jute Mesh. Jute mesh shall be of a uniform, open, plain weave of undyed and unbleached, single-jute yarn. Jute mesh shall be woven as follows:
Approximately 55 warp ends per meter width.
Approximately 37 weft ends per linear meter.
Mass of jute mesh shall average 0.5 (± 5%) kg per square meter.

Type B. Products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 50 Pa at 13 mm soil loss.

Type C. Products made entirely of organic materials. Only 100% organic materials are allowed. Products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 50 Pa at 13 mm soil loss.

Type D. Organic or nonorganic products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 95 Pa at 13 mm soil loss.

Class III (Permanent) Nondegradable synthetic [fibers, filaments, or nettings] which may be supplemented with degradable natural fiber components).

Type A. TRM (Turf Reinforcement Mat) mat products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 95 Pa at 13 mm soil loss.

Type B. TRM mat products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 150 Pa at 13 mm soil loss.
Type C. TRM mat (which includes a composite) products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 110 Pa at 13 mm soil loss.

Type D. TRM mat (which includes a composite) products shall have the ability to protect soil from hydraulically induced shear stresses under bench scale conditions for at least 150 Pa at 13 mm soil loss.

Class IV Soil Stabilizers. Soil stabilizers are short-term duration, erosion control products. When used alone, they shall be used on slopes 1:2 or flatter. They shall not be used in channels or in areas of concentrated flow. Type A, B, and C soil stabilizers may be used alone or in combination with Class III, Types A and B Turf Reinforcement Materials where those products are used on slope applications.

Type A. Type A Soil Stabilizer shall be a soil binding system consisting of one of the following:

A Cementitious soil binder which is added to wood cellulose fiber mulch, a Bonded Fiber Matrix (BFM), intended to form a thick, heavy-bodied crust or mat-like barrier that controls storm water and wind induced erosion. BFMs last up to six months and require a cure time up to 48 hours, without rain, to develop intimate soil contact.

A Soil stabilizing polymer which is added to wood cellulose fiber mulch, a Polymer Stabilized Fiber Matrix (PSFM), intended to form a matrix that is designed to work directly with soil to maintain its stability by preserving existing soil structure, flocculating fine sediment being dislodged by storm water or wind, and to prevent splash erosion. PSFMs last up to six months and require a cure time up to 24 hours.

Type B. An anionic polyacrylamide (PAM) and calcium solution intended to reduce the erodibility of bare soils during construction activities or to enhance the performance of mulching on permanent slopes. Soil stabilizers, Type B, shall bond soil particles and shall effectively increase the soil particle size to 1.3 mm or larger. Soil stabilizers, Type B, shall reduce the movement of soil due to chemical bonding, thereby increasing the particle size rendering silt fence/sediment trapping devices more effective, and increase the water absorption of the soil.

Type C. A soil binder which may be made up of wood fibers, straw fibers, cotton fibers, interlocking fibers, polymers and hydro-colloid tackifiers, a Flexible Growth Medium (FGM) or Cotton Fiber Reinforcement Matrix (C-FRM). Intended to form a thick, heavy-bodied crust or mat-like barrier that controls storm water and wind induced erosion. FGMs/C-FRMs last up to a year and require no cure time to develop intimate soil contact.

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer. Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Materials will be accepted on the basis of the manufacturer’s name and location appearing on the Approved List and a material certification that specifies the product conforms to this specification.

713-08 MATERIALS FOR PROTECTION OF PLANTS

SCOPE. This specification covers the material requirements for materials used in planting and protection of plant operations.

MATERIAL REQUIREMENTS

Rodent Guards. Shall be a commercially available horticultural product created for this activity.
**Stakes for Supporting Trees**

**A. Above Ground Support.** Shall be wooden stakes, commercially available product or system developed for supporting trees. Wooden stakes shall be 2.5 M to 3.0 M long with a minimum diameter of 50 mm to 60 mm or stakes 3.70 M long which shall have a minimum diameter of 75 mm. The maximum diameter of stakes shall not exceed 100 mm. Stakes shall be pointed at one end. All wooden stakes shall be sound and free from insects and fungi.

**B. Underground Support.** Shall be a commercially available product or system developed for supporting trees.

**Wire.** Wire for guying plants shall be annealed steel wire (either galvanized or ungalvanized).

**Hose.** Hose for protecting the bark from guy wires shall be braided rubber, plastic, or reinforced materials. Hose shall be at least 20 mm outside diameter.

**Straps for Protecting Tree Bark.** Straps for protecting tree bark from guy wires shall be stretch resistant nylon or polypropylene fabric. Straps shall be 25 mm wide, shall have soft woven edges to assure abrasion resistance and shall have metal grommets at each end for the purpose of attaching guy wires. Straps shall be of sufficient length to assure guy wires will not be in contact with the tree. Straps for guying trees up to and including 50 mm in diameter shall have a minimum breaking strength of 450 kilograms. Straps for guying trees up to and including 150 mm in diameter shall have a minimum breaking strength of 1800 kilograms.

**Anti-Desiccants.** Anti-desiccants shall be emulsions or other materials which will provide a protective film over plant surfaces, permeable enough to permit transpiration.

**Portable Drip Irrigation System (PDIS).** PDIS shall allow slow even watering. PDIS shall be a slow release watering system with accommodation for even watering. The fill opening shall accommodate a standard hose diameter. PDIS watering systems shall be constructed so that they can be attached to the trees, provide water from two drip points (minimum) and have a zipper or similar method to attach securely to the tree. PDIS watering system or bags shall be UV treated reinforced Polyethylene material. Each shall be sized according to manufacture’s recommendation for plant size and type.

**Mowing Markers.**

**A. Type A.** Mowing limit markers shall be any commercially available semi-rigid composite fiber reinforced plastic posts or flexible co-extruded polyethylene posts with U.V. inhibitors. Posts shall not crack at -29 °C. Posts shall have adhesive decals meeting the following requirements and conforming to the attached details:

- **Posts or post assemblies shall be such that they can withstand wind and shall be approved by the Engineer.**
- **Approximate Width:** 65 mm to 75 mm
- **Length:** 1.20 M above ground
- **Color:** Medium to dark brown or black.
- **Anchor Device:** Manufacturer’s standard anchor system
  - Decals shall be brown or black and shall match the color of the posts. Decals shall be cast vinyl sheeting, adhesive on one side, with inks suitable for outdoor use and shall be covered with a laminate protective layer that provides resistance to weather, graffiti, vandalism and discoloration. Letters shall be white and of a size and weight to fully utilize the full dimension of the decal and shall be legible.
B. Type B. Mowing limit markers shall be any commercially available glass fiber reinforced polyester stakes, manufactured with UV inhibitors and shall not crack at -30°C. Tubular stakes shall be 4.75 mm (ID), with a 1.6 mm wall thickness, approximately 1.80 m in length, and sealed on top with a cap or similar method. Color shall be olive drab green. Note: Solid glass fiber stakes which have the same length and color may be substituted with the approval of the Engineer.

Reflective Tapes. Material shall be reflective safety tape rated for 5 to 7 years of outdoor life meeting ASTM specifications D4596. Tape shall be 50 mm wide, reflective tape, in red or yellow.

BASIS OF ACCEPTANCE. Material for the protection of plants will be accepted on the basis of a visual inspection.

713-09 MYCORRHIZAL FUNGI

SCOPE. This specification covers the materials requirements for mycorrhizal fungi.

MATERIAL REQUIREMENTS. Mycorrhizal fungi shall be commercially available products suited to and labeled for the intended purpose.

Products for turf establishment shall be granular (when mixed directly with soil), or soluble powder or liquid (when mixed with seeds for drill seeding or hydroseeding) and shall typically include:
- Endomycorrhizal fungi. Live propagules (spores, colonized roots, hyphae) of vesicular arbuscular (VA) fungi including Glomus intraradices and at least two other Glomus species shown to be biologically adapted to grass. Water-absorbent polymers shall typically not be included.

Products for planting pits, beds and Tree Root Zone Treatment (Vertical Mulching/Aeration) shall typically be granular and shall typically include:
- Endomycorrhizal fungi. Live propagules (spores, colonized roots, hyphae) of vesicular arbuscular (VA) fungi including Glomus intraradices and at least two other Glomus species.
- Ectomycorrhizal fungi. Live spores of Pisolithus tinctorius and at least four Rhizopogon species.

Products may also include any or all of:
- Biostimulants such as Dry soluble yucca extract (yucca schidigera), soluble sea kelp extract (ascophyllum, nodosum) and humic acid (leonardite humates)
- Amino acids, vitamins, enzymes, beneficial bacteria, microbial metabolites, trichoderma fungi.
- Water management gels such as water-absorbent polymer (for planting pits, beds and Tree Root Zone Treatment only – not for turf applications.

PACKAGING. Mycorrhizal fungi shall be delivered in the manufacturer’s standard containers. Containers shall include a label stating the name of the material, species, propagule counts, application rates, expiration date, the net weight of the contents, and the manufacturer’s name.

BASIS OF ACCEPTANCE. Mycorrhizal fungi will be accepted on the basis of the manufacturer’s label or material certification indicating compliance with these specifications. The Department reserves the right to reject any material that has become caked or otherwise damaged. Material that has expired will be rejected.

713-10 MOISTURE RETENTION ADDITIVE
LANDSCAPE DEVELOPMENT MATERIALS

SCOPE. This specification covers the material requirements for moisture retention additive.

MATERIAL REQUIREMENTS. Moisture retention additives shall be commercially available Polyacrylamide or Co-polymer of Acrylamide Hydro gel polymer products.

PACKAGING. Moisture retention additives shall be delivered in the manufacturer’s standard containers. Containers shall include a label stating the name of the material, application rates, expiration date, the net weight of the contents, and the manufacturer’s name.

BASIS OF ACCEPTANCE. Moisture retention additives will be accepted on the basis of the manufacturer’s label or material certification indicating compliance with these specifications.

713-11 MULCH FOR TURF ESTABLISHMENT AND EROSION CONTROL

SCOPE. This specification covers the material requirements for organic mulch materials used in conjunction with turf establishment or erosion control.

MATERIAL REQUIREMENTS.

General
Mulch shall be manufactured so that the materials will remain uniformly suspended in water under agitation and will blend with seeds, fertilizer and other additives to form homogeneous slurry. It shall have the characteristics which, upon hydraulic application, shall form a blotter-like ground coating with moisture absorption and percolation properties and the ability to cover and hold seeds in contact with the soil. Mulch shall contain no growth or germination inhibiting factors.

Type I. Wood Fiber Mulch. Wood fiber shall be a first generation product manufactured directly from 100 percent wood which has been recovered or diverted from solid waste.

Wood fiber shall be manufactured from unadulterated wood that is not contaminated with paint, chemicals, non-wood shingles, plastic or other foreign materials. Wood fiber mulch shall not be manufactured exclusively from paper.

Type II Cellulose Mulch. Cellulose or Paper mulch shall be composed of 100% clean recycled cellulose fiber and free of plastic netting.

Water Holding Capacity >1000%
Moisture Content 12% +/- 3
Organic Matter >93%
Ash Content <7%
pH Range 6.5 +/- 2
Non toxic dye

Type III Cellulose and Wood Fiber Blend Mulch. Cellulose and Wood fiber blend shall be composed of biodegradable recycled 100 % wood fibers and recycled paper, phyto-sanitized and free from plastic netting.

Wood fiber 70% Minimum
Paper fiber 30% Maximum
Water Holding Capacity >1000%
Moisture Content 12% +/- 3
Organic Matter >93%
Ash Content <7%
pH Range 5.5 +/- 2

Type IV Cotton Hydro Mulch. Cotton hydro mulch shall be a blend of processed straw and reclaimed cotton plant materials.
Straw 80% Maximum
Reclaimed Cotton Plant Material 17% Minimum
Additives, Activators and Tackifiers Range 3 to 10%
Moisture Content 12% +/- 3
Organic Matter ≥90%

**Type V Pelletized Hydro Mulch.** Cellulose and Wood fiber blend shall be composed of clean cellulose fiber and raw lumber chips manufactured from unadulterated wood that is not contaminated with paint, chemicals, non-wood shingles, plastic or other foreign materials.

Wood fiber 20% Minimum
Paper fiber 80% Maximum
Water Holding Capacity >850%
Moisture Content Range 12 to 15% +/- 3
Organic Matter >93%
Ash Content <7%
pH Range 7.0 +/- 2

**PACKAGING AND LABELING.** Mulch shall be supplied in the manufacturer's standard containers, with the name of the material, net weight of contents, the manufacturer's name and the air dry weight of fiber (equivalent to 10% moisture) appearing on each container.

**STORAGE AND HANDLING.** Store and handle in compliance with manufacturer’s instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations.

**BASIS OF ACCEPTANCE.** Mulch will be accepted on the basis of the manufacturer’s product label, including methods and rates of applications, and material certification indicating compliance with these specifications and any applicable regulatory requirements pertaining to solid waste management.

### 713-12 MULCH ANCHORAGE

**SCOPE.** This specification covers the material requirements for mulch anchorage.

**MATERIAL REQUIREMENTS.** Mulch anchorage shall be 713-07 Class IV Soil Stabilizers or any non-asphaltic, non-toxic commercially available products formulated for the purpose of anchoring or tacking straw mulch. The paper content of paper-based hydraulic mulch anchorage shall be 100 percent post consumer recovered from solid waste.

**PACKAGING.** Mulch Anchorage shall be furnished in the manufacturer's standard containers with the name of the material, net weight of contents, the manufacturer's name and the dry weight of fiber (equivalent to 10% moisture) appearing on each container. The instructions for mixing and application shall also appear on each container.

**BASIS OF ACCEPTANCE.** Mulch Anchorage will be accepted on the basis of the manufacturer's product label or product literature that indicates compliance with this specification. Materials that have become wet, caked, frozen, separated or otherwise unfit for use will be rejected.

### 713-13 PESTICIDES

**SCOPE.** This specification covers the material requirements for pesticides used to manage vegetation, insects, rodents and/or other target pests.

**MATERIAL REQUIREMENTS.** Pesticides shall be approved commercially available products that are currently registered by the US Environmental Protection Agency and the NYS Department of
Environmental Conservation. Pesticides shall also have all required labels indicating that they are approved for the intended use.

Pesticides shall be mixed and used in strict conformance with the instructions on the label or supplemental labels.

**PACKAGING.** Pesticides shall be delivered and securely stored until used in the manufacturer's standard containers that have legible labels affixed. Pesticides that do not meet these packaging requirements will be rejected.

Pesticide containers shall be sealed. Containers with breaks, damage; or altered, obliterated, illegible, or missing labels will not be accepted.

**BASIS OF ACCEPTANCE.** Pesticides will be accepted on the basis of the original, sealed, and properly labeled pesticide containers; and two copies of sample labels and supplemental labels that include instructions for the intended use of the pesticide. Pesticides that have become wet, caked or otherwise unfit for use will be rejected.

**713-14 SOD**

**SCOPE.** This specification covers the material requirements for sod.

**MATERIAL REQUIREMENTS.** Sod shall be commercially grown sod and shall be accompanied by a certificate indicating compliance with the regulations of the NYS Department of Agriculture and Markets.

Sources of sod shall be made known to the Engineer at least five calendar days before cutting. Sod shall be cut into squares or rectangular portions which shall be a minimum of 300 mm wide, or as approved, and may vary in length, but shall be of a size which will permit them to be lifted without breaking. Height of the grass shall not exceed 75 mm. The sod shall be cut to a minimum thickness of 19 mm. The sod shall be reasonably free from weeds in conformance with accepted commercial practice. The sod shall consist of a mixture of at least three permanent grasses such as bluegrass and fine leaved fescues, unless otherwise specified. Sod that is heat damaged or fermenting will be rejected.

**DELIVERY AND HANDLING.** Sod shall be delivered to the job within 24 hours after being cut and installed within 48 hours after being cut. The sod, when delivered to the contract site and during the time it is held on site, shall be sufficiently moist so the soil will adhere firmly to the roots when it is handled.

**BASIS OF ACCEPTANCE.** Sod will be accepted based on inspection for compliance with the material requirements.

**713-15 COMPOST**

**SCOPE.** This specification covers the material requirements for organic material used in conjunction with amending or manufacturing topsoil and for erosion control products.

**MATERIAL REQUIREMENTS.** Compost shall be the material resulting from the biological and biochemical decomposition of biosolids, source-separated organic waste, yard waste, leaves or agricultural waste. These composts shall have been commercially or municipally produced. Compost and composting facilities shall be in compliance with all federal laws (40 CFR Part 503 and others), Article 10 of the Agriculture and Markets Law and 6 NYCRR Part 360.

Biosolids, including mixed solid waste, septage and other sludges, are the solid or semi-solid organic material generated by a wastewater treatment plant. Source-separated organic waste (SSOW) is readily decomposable material that is separated at the point of waste generation, and may include, but not be limited to, food scraps, food processing residues, soiled and/or unrecyclable paper, and other compostable
LANDSCAPE DEVELOPMENT MATERIALS

materials. Yard waste includes grass clippings, leaves and other similar readily-compostable organic material.

Compost shall be reasonably free of sticks, stones, refuse, materials deleterious to soil structure, or any material toxic or detrimental to plant germination and growth. Compost containing foreign material may be rejected on the basis of a visual examination.

Composted biosolids shall have a certificate from a laboratory approved by the NYSDOH verifying compliance with all applicable laws, rules, and regulations. Only facilities permitted to compost biosolids under 6 NYCRR Part 360 will be allowed to furnish biosolid compost. The certification shall be supplied by the Contractor prior to the delivery of any composted biosolids, topsoil containing composted biosolids, or other such regulated material to the contract site.

**Type A. Compost for Turf Establishment, Sodding, and Planting.** Compost for Turf Establishment, Sodding, and Planting shall have a minimum organic-matter content of 30% (dry-weight basis) as determined by loss on ignition.

Product shall be loose and friable, not dusty, and have a moisture content of 35% - 60%, (wet weight basis).

Particle size shall be < 13 mm, (100% passing).

Soluble salts concentration shall be < 4.0 mmhos/cm (ds/m), maximum.

Compost shall be stable to very stable.

pH shall be between 6.0-8.5.

**Type B. Compost for Erosion/Sediment Control Filter Berms.** Compost for Erosion/Sediment Control Filter Berms shall meet the requirements of AASHTO Designation MP 9-03 and as follows:

Minimum organic matter content 25% - 65% (dry-weight basis) surfaces to be vegetated; 25% - 100% (dry weight basis) surfaces to be left unvegetated.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
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<tbody>
<tr>
<td>75 mm</td>
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<td>25 mm</td>
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Maximum particle length; 150 mm

Soluble salt concentration shall be 5 mmhos/cm; (ds/m) maximum.

Compost shall be stable to very stable

pH shall be between 5.0 - 8.5.

**Type C. Compost for Erosion/Sediment Control Compost Blankets (Mulch for Seeded Areas).** Compost for Erosion/Sediment Control Compost Blankets, (mulch for seeded areas), shall meet the requirements of AASHTO Designation MP 10-03 and as follows:

For surfaces to be vegetated, minimum organic matter content 25% - 65% (dry weight basis); for surfaces to be left unvegetated 25% - 100% (dry-weight basis).

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Maximum particle length; 150 mm
LANDSCAPE DEVELOPMENT MATERIALS

Soluble salt concentration shall be 5 mmhos/cm; (ds/m) maximum.
Compost shall be stable to very stable.
pH shall be between 5.0 - 8.5.

Type D. Leaf Compost. The material shall consist exclusively of deciduous leaf material. Compost material that contains food waste, sewage waste, or other waste material is unacceptable. The leaf compost shall be mature (actively composted for 6 months minimum, and temperature slightly above air temperature) and humic (organic material is no longer rapidly degrading). Mature compost material shall be a dark, friable, partially decomposed substance that has an earthy odor. Visible fibers should be short and dark with no discernable particles of leaf material. Because not all items decompose at the same rate screening may be necessary to remove larger partially decomposed material and/or undecomposed material.

Organic Content – 25% to 100% by dry weight
Natural Inert Material - <5% by dry weight of woody or green yard debris material.
Man Made Inert Material - <1% by dry weight of man made material such as glass or plastic.
Bulk Density – 636 to 812 kg/m³
Moisture Content – 30% to 60% by total weight

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Maximum particle length; 150 mm

Type E. Well Rotted Manure. The material shall consist of animal excreta with litter material. The well rotted manure shall be mature (aged a minimum of one year), dark brown or black in color, crumbly in texture, and shall not have an objectionable odor. The material’s moisture content shall be such that no visible free water or dust is produced when handling it. It shall contain no visible admixture of refuse or other physical contaminates or any material toxic to plant growth.

BASIS OF ACCEPTANCE. Compost will be accepted on the basis of a Producer’s label or a certificate of analysis by a laboratory certified by a nationally recognized entity indicating compliance with the material requirements and visual inspection.

Composted biosolids will be accepted on the basis of a material certification by a NYSDOH approved laboratory that the product conforms to this specification and all applicable regulations.

Compost supplied or manufactured by participants in the US Composting Council’s Seal of Testing Approval Program will be accepted on the basis of the Program’s Compost Technical Data Sheets. The data shall represent a minimum of one year of testing results and the most recent test shall have been conducted with ninety days of material acceptance.

Compost supplied or manufactured by suppliers that do not participate in the US Composting Council Seal of Testing Approval Program will be accepted on the basis of a material certification, by a laboratory certified by a nationally recognized entity, that the product conforms to this specification.

The Department reserves the right to sample and test the materials subsequent to delivery.

713-16 (VACANT)

713-17 SULFUR

SCOPE. This specification covers the material requirements for elemental sulfur (flowers of sulfur).

MATERIAL REQUIREMENTS.
PACKAGING. Agricultural sulfur packed in the manufacturer's standard containers shall weigh not over 45 kilograms each, with the name of the material, net weight of contents and the manufacturer's name and guaranteed analysis appearing on each container. Sulfur shall be commercially available products.

DELIVERY. Bulk delivery of sulfur shall be accompanied by a certificate providing the names, weight and analysis as specified herein for packaged material.

BASIS OF ACCEPTANCE. Sulfur will be accepted on the basis of the manufacturer's label or certificate and visual inspection for compliance with the material requirements.

713-18 WEED CONTROL BARRIERS

SCOPE. This specification covers the material requirements for landscape fabrics, mats and Geotextiles specifically manufactured to control weed growth.

MATERIAL REQUIREMENTS. Weed control barriers shall be commercially available products.

Type A. Permeable Landscape Fabric. Permeable Landscape Fabric shall be a permeable weed blocking geotextile resistant to rot, mold, chemicals and micro-organisms which allows the free flow of water, air, fertilizers and nutrients.

Type B. Permeable Landscape Fabric with Herbicide. Permeable Landscape Fabric with Herbicide shall be durable, nonwoven, polypropylene geotextile fabric with permanently attached nodules containing a slow release herbicide with a maximum EPA toxicity rating of class IV.

Type C. Permeable Weed Barrier Mat. Permeable Weed Barrier Mat shall be a commercial weed control product. The mat shall prevent sunlight, water, or vegetation nutrients from reaching the soil underneath. The mat shall contain no herbicides and shall resist ultraviolet light, mildew, and algae. The mat shall be self-extinguishing when removed from flame.

The mat shall be a polyester matting system a minimum 5 mm thick, with a minimum weight of 1 kilogram per square meter, able to support pedestrian traffic and commercial tractor mowing equipment’s wheels and skid plates without displacement.

BASIS OF ACCEPTANCE. Weed control mats or fabric will be accepted on the basis of the manufacturer's label or certificate and visual inspection for compliance with the material requirements.

713-19 STRAW

SCOPE. This specification covers the materials requirements for straw.

MATERIAL REQUIREMENTS. Straw for mulching shall be stalks of oats, wheat, rye or other similar crops which are free from noxious and invasive species. Straw shall show no signs of excessive moisture and be visually free of mold or mildew.

BASIS OF ACCEPTANCE. Straw will be accepted on the basis of a visual inspection for compliance with the material requirement.
ITEM 611.19010024 - POST-PLANTING CARE WITH REPLACEMENT - MAJOR DECIDUOUS TREES
ITEM 611.19020024 - POST-PLANTING CARE WITH REPLACEMENT - MINOR DECIDUOUS TREES
ITEM 611.19030024 - POST-PLANTING CARE WITH REPLACEMENT - CONIFEROUS TREES
ITEM 611.19040024 - POST-PLANTING CARE WITH REPLACEMENT - DECIDUOUS SHRUBS
ITEM 611.19050024 - POST-PLANTING CARE WITH REPLACEMENT - EVERGREEN SHRUBS
ITEM 611.19060024 - POST-PLANTING CARE WITH REPLACEMENT – VINES, GROUNDCOVERS
ITEM 611.19070024 - POST-PLANTING CARE WITH REPLACEMENT - HERBACEOUS PLANTS

DESCRIPTION

This work consists of the care of newly planted and transplanted trees, shrubs, vines, groundcovers and other plants and replacement of plants in kind and as necessary, in accordance with the contract documents and as directed by the Engineer.

MATERIALS

Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Water 712-01
- Topsoil 713-01
- Mulch for Landscape Bedding 713-05
- Trees, Shrubs and Vines 713-06
- Materials for the Protection of Plants 713-08
- Pesticides 713-13

CONSTRUCTION

Post-Planting Care. The Contractor shall perform all work as specified under Standard Specification section 611-3.05 Post-Planting Care.

Replacement Planting. Plants that die, become diseased or badly impaired during Post-Planting Care shall be removed and replaced in kind once with new, healthy plant material, in the same location as the initial planting. Replacement planting shall occur within the planting seasons shown in Standard Specification Table 611-1. For any plants replaced during the Post-Planting Care period, Post-Planting Care shall continue to the end of the period.

Replacement plants shall be planted, maintained and accepted per Standard Specification Section 611-3.01. Planting soil used in the initial planting shall be reused for replacement plants and shall be supplemented with topsoil at no additional cost if additional material is needed to meet grade and surface finish. Watering shall accompany backfilling, at no additional cost. No replacement tree shall be staked, guyed or anchored.

METHOD OF MEASUREMENT.
ITEM 611.19010024 - POST-PLANTING CARE WITH REPLACEMENT - MAJOR DECIDUOUS TREES
ITEM 611.19020024 - POST-PLANTING CARE WITH REPLACEMENT - MINOR DECIDUOUS TREES
ITEM 611.19030024 - POST-PLANTING CARE WITH REPLACEMENT - CONIFEROUS TREES
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ITEM 611.19060024 - POST-PLANTING CARE WITH REPLACEMENT– VINES, GROUNDCOVERS
ITEM 611.19070024 - POST-PLANTING CARE WITH REPLACEMENT - HERBACEOUS PLANTS

The quantity to be measured for payment will be the number of plants of each type cared for and, if necessary, replaced in kind.

**BASIS OF PAYMENT.**

The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

Payment will be made under:

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<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
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<tbody>
<tr>
<td>611.19010024</td>
<td>Post Planting Care with Replacement - Major Deciduous Trees</td>
<td>Each</td>
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<tr>
<td>611.19020024</td>
<td>Post Planting Care with Replacement - Minor Deciduous Trees</td>
<td>Each</td>
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<td>Post Planting Care with Replacement - Coniferous Trees</td>
<td>Each</td>
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<tr>
<td>611.19040024</td>
<td>Post Planting Care with Replacement - Deciduous Shrubs</td>
<td>Each</td>
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<td>Post Planting Care with Replacement - Evergreen Shrubs</td>
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<td>611.19060024</td>
<td>Post Planting Care with Replacement– Vines, Groundcovers</td>
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<tr>
<td>611.19070024</td>
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ITEM 611.1901 24 - POST-PLANTING CARE WITH REPLACEMENT - MAJOR DECIDUOUS TREES
ITEM 611.1902 24 - POST-PLANTING CARE WITH REPLACEMENT - MINOR DECIDUOUS TREES
ITEM 611.1903 24 - POST-PLANTING CARE WITH REPLACEMENT - CONIFEROUS TREES
ITEM 611.1904 24 - POST-PLANTING CARE WITH REPLACEMENT - DECIDUOUS SHRUBS
ITEM 611.1905 24 - POST-PLANTING CARE WITH REPLACEMENT - EVERGREEN SHRUBS
ITEM 611.1906 24 - POST-PLANTING CARE WITH REPLACEMENT – VINES, GROUNDCOVERS
ITEM 611.1907 24 - POST-PLANTING CARE WITH REPLACEMENT - HERBACEOUS PLANTS

DESCRIPTION

This work consists of the care of newly planted and transplanted trees, shrubs, vines, groundcovers and other plants and replacement of plants in kind and as necessary, in accordance with the contract documents and as directed by the Engineer.

MATERIALS

Materials shall meet the requirements of the following subsections of Section 700 Materials and Manufacturing.

- Water 712-01
- Topsoil 713-01
- Mulch for Landscape Bedding 713-05
- Trees, Shrubs and Vines 713-06
- Materials for the Protection of Plants 713-08
- Pesticides 713-13

CONSTRUCTION

Post-Planting Care. The Contractor shall perform all work as specified under Standard Specification section 611-3.05 Post-Planting Care.

Replacement Planting. Plants that die, become diseased or badly impaired during Post-Planting Care shall be removed and replaced in kind once with new, healthy plant material, in the same location as the initial planting. Replacement planting shall occur within the planting seasons shown in Standard Specification Table 611-1. For any plants replaced during the Post-Planting Care period, Post-Planting Care shall continue to the end of the period.

Replacement plants shall be planted, maintained and accepted per Standard Specification Section 611-3.01. Planting soil used in the initial planting shall be reused for replacement plants and shall be supplemented with topsoil at no additional cost if additional material is needed to meet grade and surface finish. Watering shall accompany backfilling, at no additional cost. No replacement tree shall be staked, guyed or anchored.

METHOD OF MEASUREMENT.
ITEM 611.1901 24 - POST-PLANTING CARE WITH REPLACEMENT - MAJOR DECIDUOUS TREES
ITEM 611.1902 24 - POST-PLANTING CARE WITH REPLACEMENT - MINOR DECIDUOUS TREES
ITEM 611.1903 24 - POST-PLANTING CARE WITH REPLACEMENT - CONIFEROUS TREES
ITEM 611.1904 24 - POST-PLANTING CARE WITH REPLACEMENT - DECIDUOUS SHRUBS
ITEM 611.1905 24 - POST-PLANTING CARE WITH REPLACEMENT - EVERGREEN SHRUBS
ITEM 611.1906 24 - POST-PLANTING CARE WITH REPLACEMENT – VINES, GROUNDCOVERS
ITEM 611.1907 24 - POST-PLANTING CARE WITH REPLACEMENT - HERBACEOUS PLANTS

The quantity to be measured for payment will be the number of plants of each type cared for and, if necessary, replaced in kind.

**BASIS OF PAYMENT.**

The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

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<td>611.1905 24</td>
<td>Post Planting Care with Replacement - Evergreen Shrubs</td>
<td>Each</td>
</tr>
<tr>
<td>611.1906 24</td>
<td>Post Planting Care with Replacement – Vines, Groundcovers</td>
<td>Each</td>
</tr>
<tr>
<td>611.1907 24</td>
<td>Post Planting Care with Replacement - Herbaceous Plants</td>
<td>Each</td>
</tr>
</tbody>
</table>