

TOWN OF STRATFORD

STRATFORD TOWN HALL PLANTINGS AND INSTALLATION PROJECT SPECIFICATION



BID #2015-012

INFORMATION FOR BIDDERS

1. Form and Submission of Bid

- a. One copy of this document will be furnished to the bidders. The Bid Sheet shall be completed and returned as part of the bid. The copy submitted by the successful bidder shall be completed in its entirety, executed and retained by the Town of Stratford, sometimes referred to as the Town. From this executed copy, three other conformed copies will be made, one of which will be sent to the Contractor.
- b. Bid Documents must be enclosed in a sealed opaque envelope plainly marked on the outside with the name and address of the Contractor; addressed to Michael Bonnar, Purchasing Department, Town of Stratford, 2725 Main Street, Stratford, CT 06615, and shall be labeled with the bid number.

Due Date : April 8, 2015 at 3:00pm

- c. It shall be the responsibility of each Bidder to have his Bid Proposal at the Purchasing Department at the time of Bid Opening; the Town of Stratford shall not be held in any way for failure of bidder to have his Bid Proposal submitted at such time and Bids arriving after the indicated Bid Opening time will not be accepted. Late bids arriving by mail shall be returned to the sender unopened.

2. Bid Bond / Bid Security

A Bid Bond in the amount of five percent (5%) of the bid amount made payable to the Town of Stratford. A certified check will be acceptable. Each such Bid Bond may be held by the Town as security for the fulfillment of the Bidder's agreements as hereinabove set forth and as set forth in the Bid. Should the Bidder fail to fulfill such agreements, the Bid Bond shall become payable to the Town as liquidated damages; otherwise, the Bid Bond shall become null and void. The successful apparent low-bidder will be required to furnish a performance bond in the amount equal to the contract award.

3. Withdrawal of Bids

Except as hereinafter in this subsection expressly provided, once his Bid is submitted and received by the Town for consideration and comparison with the other bids similarly submitted, the Bidder agrees that he may not and will not withdraw it within thirty (30) consecutive calendar days after the actual date of the opening of Bids unless extended by addendum.

Upon proper written request and identification, Bids may be withdrawn only as follows:

- a. At any time prior to the designated time for the opening of bids.

- b. Unless a Bid is withdrawn as provided above, the Bidder agrees that it shall be deemed open for acceptance until the Agreement has been executed by both parties thereto or until the Town notifies a Bidder in writing that his Bid is rejected or that the Town does not intend to accept it. Notice of acceptance of a Bid shall not constitute rejection of any other Bid.

4. Bidders to Investigate

Where applicable, Bidders are required to submit their Bids upon the following express conditions which shall apply to and be deemed a part of every Bid received. Bidders must satisfy themselves by personal examination of the site of the work and by such means as they may wish, as to the actual conditions there existing, the character and requirements of the work, and the difficulties attendant upon its execution, and the accuracy of all estimated quantities, if any, stated in the Bid.

- a. **An informational pre-bid meeting will be held on Wednesday March 26th, 2015 at 10:00am.**

We will meet at the Town Hall (front steps) 2725 Main Street, Stratford, CT

5. Ability and Experience of Bidder

No award will be made to any Bidder who cannot satisfy the Town that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable him to prosecute and complete the work successfully within the time named or where such time is not named, within a reasonable period of time as is determined by the contracting officer or agency. The Town's decision or judgment on these matters shall be final, conclusive and binding.

The Town may make such investigations as it deems necessary, and the Bidder shall furnish to the Town, under oath if so required, all such information and data for this purpose as the Town may request.

6. Interpretations

Questions Regarding Drawings and Documents – Questions must be directed to Brian Carey, Town of Stratford, Conservation Department: bcarey@townofstratford.com. Questions and Answers, and Addenda will be posted at the Town of Stratford Purchasing Website. No phone questions will be accepted. It is the responsibility of the prospective bidder who is downloading this bid to check this website for any addenda issued up to 48 hours before the deadline.

The Contractor agrees to use the products and methods designated or described in the specifications or as amended by the addenda.

Bids. The Town of Stratford reserves the right to reject Bids which in its judgment are incomplete, conditional, obscure, or not responsible or which contain additions not called for, erasures not properly initialed, alterations or similar irregularities if deemed in the Town's best interest to do so.

Right to Reject or Accept Bids. The Town of Stratford reserves the right to reject any and all bids not deemed to be in the best interest of the Town of Stratford. The Town of Stratford reserves the right to waive any informality in or reject any or all bids, or any part of any bid.

Execution of Agreement. The Bidder whose Bid is accepted will be required and agrees to duly execute the Agreement and furnish the required Bond within such time as deemed reasonable by the Town or Contracting Officer.

Non-Connecticut Contractors 5 % Tax.

Pursuant to Connecticut General Statutes § 12-430(7), as amended by Public Act No. 03-147 (An Act Concerning Sales Tax Bond Requirements For Nonresident Contractors) and Public Act No. 03-6 (An Act Concerning General Budget and Revenue Implementation), Sec. 76, a nonresident contractor shall furnish the Department of Revenue Services (DRS) a guarantee bond for five (5%) percent of the total contract price using Form AU-766, copy attached.

The nonresident contractor must have completed and submitted to the DRS Form REG-1, Business Taxes Registration Application, to register with the DRS and have been issued a Connecticut Tax Registration Number. A copy of this form is attached.

This form is also available on the State's web site:

(<http://www.drs.state.ct.us/pubs/newindx.html#NEWSLETTER>), for the purpose of online registration.

The nonresident contractor has one hundred twenty (120) days from the commencement of the contract to file the guarantee bond. As soon as the guarantee bond is filed with the DRS, a copy of such guarantee bond together with the nonresident contractor's Connecticut Tax Registration Number shall be submitted to the Town of Stratford.

After the nonresident contractor receives an Acceptance of Guarantee Bond form from the DRS confirming that the guarantee bond requirement has been met, the nonresident contractor shall submit a copy of said form, referencing the contract, to the Town of Stratford.

If the copy of the Acceptance of Guarantee Bond form is not received by the Town of Stratford within one hundred twenty (120) days from the commencement of the contract, the Town will be obligated under law to withhold payment in the amount of five (5%) percent of the contract total, including the price of all change orders and charges for add-ons, and remit the amount as a deposit to the DRS not later than thirty (30) days after the completion of the contract. The Town will also be obligated to withhold five percent (5%) from each contractor's invoice if the contractor has invoiced the Town before one hundred twenty (120) days from the commencement of the contract and has not supplied the Town with a copy of the Acceptance of Guarantee Bond.

End of Information for Bidders

BID PRICE FORM

Bidder shall complete the Work as specified in the Contract Documents for the following lump sum and unit price items (please use itemized table below) including alternates:

Base Bid – Stratford Town Hall Plantings

Show amount in both words and figures.
 In case of discrepancy, the amount shown in words will govern.
 Also see Section 00 41 11 Payment Items for a description of each payment item.

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total in Figures
1	<p>Installation of Plantings at Stratford Town Hall for the Lump Sum Price of _____ dollars</p> <p>and _____ cents (\$ _____)</p>	LS	1	\$ _____	\$ _____

Alternative Bid Payment Items - Stratford Town Hall Plantings

Show amount in both words and figures.

In case of discrepancy, the amount shown in words will govern.

Also see Section 00 41 11 Payment Items for a description of each payment item.

Item No.	Item and Unit Price	Unit	Estimated Quantity	Unit Price	Total in Figures
A1	Alternative Payment Item No.1 – Back Area Plantings for the Lump Sum Price of _____dollars and _____cents (\$ _____ _) <input type="checkbox"/> CHECK IF ITEM IS FOR A CREDIT VALUE	LS	1	\$ _____	\$ _____
A2	Alternative Payment Item No.2 – Back Area Plantings for the Lump Sum Price of _____dollars and _____cents (\$ _____ _) <input type="checkbox"/> CHECK IF ITEM IS FOR A CREDIT VALUE	LS	1	\$ _____	\$ _____
A3	Alternative Payment Item No.3 – Back Area Plantings for the Lump Sum Price of _____dollars and _____cents (\$ _____ _) <input type="checkbox"/> CHECK IF ITEM IS FOR A CREDIT VALUE	LS	1	\$ _____	\$ _____
A4	Alternative Payment Item No.4 – Back Area Plantings for the Lump Sum Price of _____dollars and _____cents (\$ _____ _) <input type="checkbox"/> CHECK IF ITEM IS FOR A CREDIT VALUE	LS	1	\$ _____	\$ _____

Bidder affirms that the above lump sum and unit price costs represent the entire cost to complete the Work in accordance with the Contract Documents and that no claim will be made on account of any increase in wage scales, material prices, delivery delays, taxes, insurance, cost indexes or any other rates affecting the construction industry or this Project, and that each and every such claim is hereby expressly waived by Bidder.

Name of Bidder (Firm):	
Signature of Bidder Representative:	
Name (Type/Print):	
Title:	
Date:	

SECTION 00 41 11

PAYMENT ITEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections apply to this Section.

1.2 SUMMARY

- A. This section includes measurement and payment paragraphs for the following:
1. Payment items (lump sum) for items associated with the installation of new landscape plantings at Stratford Town hall.
 2. Bidders must submit a complete bid.
 - a. Bidders may be disqualified for submitting more than one proposal in accordance with Instructions to Bidders.
 3. Successful Bids will include the lowest responsible, responsive bidder.
 4. The Owner also reserves the right to reject all Bids.
- B. Related Sections include the following:
1. Division 32 Sections for detailed procedural, material, and requirements associated with the Work of each payment item.

1.3 DEFINITIONS

- A. Bid: The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- C. Payment Items: The Owner's distribution of the Contract Sum for each Bid through listed work items.
1. Each payment item description includes an anticipated scope of services. However, not all materials, labor, equipment, or services required to complete the Work are guaranteed to be listed or specified.
 2. Include costs associated with items of work required to complete the defined scope of services within the appropriately specified payment item.
 3. Payment items in the Contractor's bid shall include all necessary labor, equipment, tools, material, plus cost for delivery, installation, applicable taxes, overhead, and profit.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 BASED BID PAYMENT ITEMS

- A. Payment Item No. 1 – New Plantings for Town Hall
 - 1. Work associated with this item will be paid for at the Contract Lump Sum price for the installation of new plantings that are not identified as Alternate Bid Items in the Contract Drawings. The work referenced in the contract plans and as denoted in the specifications includes removal of existing plant material, preparation of soil for plantings, plant material and installation including topsoil amendments and mulch, and maintenance of new plantings for a period of 24 months from the date of Acceptance by the Town of Stratford, site inspection, pruning of plant material, topdressing of mulch, weed / invasive plant control and removal, and all work and materials necessary, and all work incidental thereto, in accordance with the plans and specifications, to the satisfaction of the Town of Stratford.

3. ALTERNATE BID PAYMENT ITEMS

- A. Alternate Item No. 1 – Back Area Plantings
 - 1. Work associated with this item will be paid for at the Contract Lump Sum price for the installation of new plantings identified within the Contract Drawings as Alternate #1. The work referenced in the contract plans and as denoted in the specifications includes removal of existing plant material, preparation of soil for plantings, plant material and installation including topsoil amendments and mulch, and maintenance of new plantings for a period of 24 months from the date of Acceptance by the Town of Stratford, site inspection, pruning of plant material, topdressing of mulch, weed / invasive plant control and removal, and all work and materials necessary, and all work incidental thereto, in accordance with the plans and specifications, to the satisfaction of the Town of Stratford.
- B. Alternate Item No. 2 – East Area Plantings
 - 1. Work associated with this item will be paid for at the Contract Lump Sum price for the installation of new plantings identified within the Contract Drawings as Alternate #2. The work referenced in the contract plans and as denoted in the specifications includes removal of existing plant material, preparation of soil for plantings, plant material and installation including topsoil amendments and mulch, and maintenance of new plantings for a period of 24 months from the date of Acceptance by the Town of Stratford, site inspection, pruning of plant material, topdressing of mulch, weed / invasive plant control and removal, and all work and materials necessary, and all work incidental thereto, in accordance with the plans and specifications, to the satisfaction of the Town of Stratford.

- C. Alternate Item No. 3 – West Area Plantings
1. Work associated with this item will be paid for at the Contract Lump Sum price for the installation of new plantings identified within the Contract Drawings as Alternate #3. The work referenced in the contract plans and as denoted in the specifications includes removal of existing plant material, preparation of soil for plantings, plant material and installation including topsoil amendments and mulch, and maintenance of new plantings for a period of 24 months from the date of Acceptance by the Town of Stratford, site inspection, pruning of plant material, topdressing of mulch, weed / invasive plant control and removal, and all work and materials necessary, and all work incidental thereto, in accordance with the plans and specifications, to the satisfaction of the Town of Stratford.
- D. Alternate Item No. 4 – Ilex crenata ‘Chesapeake’
1. Work associated with this item will be paid for at the Contract Lump Sum price for the installation of new shrubs identified in the plant list as Alternate 4. The shrubs are to be planted in lieu of Buxus x ‘Green Mountain’ (Green Mountain Boxwood). Warranty, maintenance and installation requirements remain the same as in the Base Bid. The Contractor shall specify if Alternate No. 4 results in a price increase or credit to the Base Bid.

END OF SECTION

SECTION 32 91 10

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing sub-grades in areas to receive topsoil.
 - 2. Providing new topsoil, if required.
 - 3. Testing topsoil.
 - 4. Delivering and spreading new topsoil.
 - 5. Soil Amendments.
 - 6. Fine grading.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 32 93 43 Planting

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product certificates signed by suppliers certifying that their products comply with specified requirements.
 - 1. Name and location of proposed supply source of new topsoil with certified analysis by recognized, independent testing service including tests for quality requirements Part 1.4.
- C. Submit test reports for the following:
 - 1. Analysis of existing surface soil.
 - 2. Analysis of imported topsoil.

3. Analysis of imported compost.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful landscape establishment. Installer shall have a minimum of 5 (five) years experience, of working on similar projects.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that landscaping is in progress.

B. Testing Agency Qualifications: Provide and pay for materials testing by recognize, independent testing service approved by Landscape Architect.

2. Take representative samples for testing (paid for by the Contractor) from materials as they are delivered or where they are found on-site, in presence of and in manner satisfactory to Landscape Architect as follows:

a. Existing topsoil and new topsoil: two (2) samples for each.

b. Tests for topsoil shall be conducted 4 (no more than) weeks prior to installation.

d. Test for compost as described below.

i. Provide a minimum of two (2) tests for compost

ii. Submit samples of compost to Landscape Architect (1/2 gallon volume)

3. Provide testing of following materials for analysis of data indicated:

a. Furnish a topsoil analysis made by a qualified independent soil-testing agency stating percentages of organic matter, soluble salts, mineral component (percentage of silt, clay, and sand as determined by USDA Classification), deleterious material, pH, and mineral and plant-nutrient content of topsoil. Additionally, Landscape Architect shall visually inspect topsoil.

1) Report suitability of topsoil for growth of applicable planting material. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce a satisfactory topsoil.

b. Compost Analysis: Furnish a compost analysis made by a qualified independent soil-testing agency stating percentages of organic matter, pH, Solvita Compost Maturity Test, moisture content, soluble salts, conductivity, and mineral and plant-nutrient content of compost.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Keep topsoil from being mixed with subsoil, subgrade materials, or other stockpiled materials, waste materials, debris and other contaminants.

1.6 PROJECT CONDITIONS

- A. Utilities: Determine location of above grade and underground utilities and perform work in a manner which will avoid damage. Hand excavate, as required. Maintain grade stakes until removal is mutually agreed upon by parties concerned.
- B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify the Landscape Architect before planting.
- C. Fine grading shall be accepted by Landscape Architect prior to seeding.
- D. Do not work with soggy, muddy or frozen topsoil or install topsoil during rain or on subgrades which are muddy, under water, or frozen.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Topsoil: ASTM D5268-02, pH range of 5.5 to 7.0, no less than 3% and no more than 5% (percent) organic material minimum; free of stones 1 inch (25 mm) or larger in any dimension and 97% - 100% will pass ¼" mesh sieve, and no other extraneous materials harmful to plant growth.
 - 1. Where specified in Contract Documents, Topsoil shall comply with profile as defined.
 - 2. Topsoil characteristics shall include:
 - a. Texture: Sandy loam to silty clay loam.
 - b. Structure: Granular, crumb, or fine subangular blocky. Loose or single-grained soils are discouraged.
 - c. Soluble Salts: less than 200 ppm.
 - d. Soils dominant in sand, silt, or clay singularly are not permitted.
 - 3. Topsoil Source: Reuse surface soil stockpiled on the site. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - 3. Topsoil Source: Import topsoil from off-site sources. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

2.2 SOIL AMENDMENTS

- A. Lime: ASTM C602-95a, Class T, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 (2.36 mm) sieve and a minimum 75 percent passing a No. 60 (250 micrometer) sieve.
 - 1. Provide lime in the form of dolomitic limestone.
- B. Aluminum Sulfate: Commercial grade, unadulterated.
- C. Sand: Clean, washed, natural or manufactured sand, free of toxic materials.
- D. Structural Enhancing Materials
 - 1. Vermiculite
 - 2. Expanded or Calcined Clay, such as “Ridgelite”, or approved equal.
 - 3. Diatomaceous Earth, such as “Isolite”, “Axis”, or approved equal.
 - 4. Perlite, horticultural soil amendment grade.
- E. Compost: : Compost shall be a stable, humus-like organic material produced by the biological and biochemical decomposition of source separated compostable materials, separated at the point of generation, that may include, but are not limited to, leaves and yard trimmings, food scraps, food processing residuals, manure and/or other agricultural residuals, forest residues and bark and soiled or non-recyclable paper. Compost shall not be altered by the addition of materials such as sand, soil or glass. Compost shall contain no substances toxic to plants and shall not contain more than 0.1 percent by dry mass of man-made foreign matter. Compost shall pose no objectionable odor and shall not closely resemble the raw material from which it was derived. Compost shall have a minimum organic matter content of thirty percent (25%) dry unit weight basis as determined by loss on ignition in accordance with ASTM D 2974. Compost shall be loose and friable, not dusty, have no visible free water and have a moisture content of thirty-five to sixty percent (35 – 60%) in accordance with ASTM D 2974. The particle size of compost shall be one hundred percent (100%) less than 25 mm in accordance with AASHTO T27 and shall be free of sticks, stones, roots or other objectionable elongated material larger than 50 mm in greatest dimension. The pH of compost shall be in the range of 5.5 – 8.0. The maturity of the compost shall be tested and reported using the Solvita Compost Maturity Test and must score six (6) or higher to be acceptable. The soluble salt content of compost shall not exceed 4.0 mmhos/cm as determined by using a dilution of one (1) part compost to one (1) part distilled water. Compost may be either commercially packaged or used in bulk form. All compost material must be from DEP regulated, permitted or approved facilities. The Landscape Architect reserves the right to draw samples and perform tests as may be deemed necessary to assure that the material conforms to these specifications..
- F. Manure: Well-rotted, unleached stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.3 FERTILIZER

- A. Bonemeal: Commercial, raw, finely ground; minimum of 4 percent nitrogen and 20 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea-form, phosphorous, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- D. Slow-Release Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive landscaping for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Examine areas to receive topsoil with Landscape Architect and identify poorly draining subgrades for corrective preparatory work. Include both naturally occurring areas and areas that may have been formerly compacted, underlain former paved areas, and compacted by construction operations and activities.

3.2 PLANTING SOIL PREPARATION

- A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
- B. Mix soil amendments and fertilizers with topsoil at rates indicated. Delay mixing fertilizer if planting does not follow placing of planting soil within a few days.
 - 1. Planting soil amendments shall be applied as indicated by soil tests.
- C. For tree pit or trench backfill, mix planting soil before backfilling and stockpile at site.
- D. For planting beds and lawns, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.
- E. Placement of Planting Soil and Subsoil

1. Placement of Planting Bed and Turf Soil shall be carried out to prevent excessive traffic over soil lifts and the final grade so as to prevent the creation of undesirable soil compaction.
2. Planting Bed and Turf Soil and Horticultural Subsoil shall be placed in lifts not to exceed 8 inches in thickness and compacted to meet minimum and maximum requirements as specified below:
 - a. A transition zone shall be formed between the Subsoil and Planting Bed and Turf Soil by placing one inch of Planting Bed and Turf Soil over the Subsoil and raking a two-inch thickness.
 - b. Horticultural Subsoil shall be compacted to between 86 and 88 percent Standard Proctor, except soils beneath the rootballs shall be compacted to between 88 and 92% Standard Proctor to create a firm pedestal and prevent settlement of the rootballs.
 - c. Planting Bed and Turf Soil shall be compacted to between 84 and 86 percent Standard Proctor.
 - d. In all cases, the soil being placed shall be in a dry to damp condition. No wet soils shall be placed. All testing of in-place density for planting materials shall be made according to ASTM D1556.

3.3 LAWN / RESTORATION SEEDING PLANTING PREPARATION

- A. Limit subgrade preparation to areas that will be planted in the immediate future.
- B. Loosen subgrade to a minimum depth of 8 inches (100 mm). Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous materials.
- C. Spread planting soil mixture to depth required to meet thickness, grades, and elevations shown, after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen.
- D. Preparation of Unchanged Grades: Where lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare soil as follows:
 1. Remove and dispose of existing grass, vegetation, and turf. Do not turn over into soil being prepared for lawns.
 2. Till surface soil to a depth of at least 6 inches (150 mm). Apply required soil amendments and initial fertilizers and mix thoroughly into top 4 inches (100 mm) of soil. Trim high areas and fill in depressions. Till soil to a homogenous mixture of fine texture.
 3. Clean surface soil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.

4. Remove waste material, including grass, vegetation, and turf, and legally dispose of it off the Owner's property.
- D. Grade lawn and grass areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future. Remove trash, debris, stones larger than 1 inch in any dimension, and other objects that may interfere with planting or maintenance operations.
1. Shape and rake surfaces to lines, finish grades and thickness required providing a smooth, uniform surface with an uninterrupted drainage pattern free of hollows and pockets.
 2. Fill, trim, blend and feather proposed grades to meet surrounding existing terrain, paving, curb, edge and building base conditions in smooth transition without abrupt level changes.
 3. Pitch surfaces for positive drainage, shedding runoff in direction of drainage courses or drain structures. Ensure that surfaces pitch away from buildings minimum 2% for 20' unless otherwise indicated on drawings.
 4. Recess finish grade at edges of paving, walkways and tops of curbs to allow for growth and build up of grass; 1" for sod lawn.
- F. Moisten prepared lawn areas before planting when soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- G. Restore prepared areas if eroded or otherwise disturbed after fine grading and before planting.

3.4 CLEANUP AND PROTECTION

- A. During landscaping, keep pavements clean and work area in an orderly condition.

3.5 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION

SECTION 32 93 43

PART 1 – GENERAL

1.1 SUMMARY

- A. The work in this section includes, but is not limited to, the following:
1. Locate, purchase, deliver and install all specified plantings.
 2. Mulch, fertilize, and prune all specified plantings.
 3. Provide maintenance of all specified plantings.

1.2 RELATED DOCUMENTS AND REFERENCES

A. Related Sections:

1. Section - Topsoil

B. References:

1. ANSI Z60.1 – 2004 American Standard for Nursery Stock, most current edition.
2. ANSI A 300 – Standard Practices for Tree, Shrub and other Woody Plant Maintenance, most current edition.
3. Interpretation of plant names and descriptions shall reference HORTUS THIRD – A Concise Dictionary of Plants Cultivated in the United States and Canada, Cornell University, L.H. Bailey Hortorium, MacMillian Publishing Co., New York, NY, most current edition.
4. Pruning practices shall conform with recommendations in An Illustrated Guide to Pruning, Second Edition, Edward F Gilman, Delmar Publishing, Albany, NY, most current edition.
5. Glossary of Arboricultural Terms, International Society of Arboriculture, Champaign Il, most current edition.

1.3 DEFINITIONS

All terms in this specification shall be as defined in the “Glossary of Arboricultural Terms” or as modified below.

- A. Container: All types of plastic or fabric containers that are NOT that have been certified by the grower to produce root systems with roots approximately radial to the trunk, reasonably free of stem girdling and kinked roots.
- B. Container Grown Trees: Trees that have been grown in a container at any point in the production cycle without corrective pruning of roots at each point in the production cycle, or the use of root safe containers to eliminate stem girdling and kinked roots.
- C. Field Grown Trees: Trees growing in field soil at the time of harvest. Field grown tree shall have been root pruned after each transplant cycle to remove Stem Girdling and Kinked Roots or which are grown in root safe container systems during earlier parts of the production cycle.
- D. Kinked Root: A root within the root package that bends 60 degrees or greater, around the trunk, or up, or down including roots deflected by the current or previous container.
- E. Plant Acceptance: The date at the end of the plant installation where the Town accepts that all work in

- this section is complete and the Warranty period has begun. This date may be different than the date of substantial completion for the other sections of the project.
- F. Plant Final Acceptance: The date when the Town accepts that the plants and work in this section meet all the requirements of the warranty.
 - G. Reasonable and Reasonably: When used in this specification relative to plant quality, it is intended to mean that the conditions cited will not affect the establishment or long term stability, health or growth of the plant. This specification recognizes that it is not possible to produce plants free of all defects. This specification also recognizes that some decisions cannot be totally based on measured findings and that professional judgment is required. In cases of differing opinion, the Town's expert shall determine when conditions within the plant are judged as reasonable.
 - H. Root Ball: The mass of roots including any soil or potting mix that is shipped with the tree within the root ball package.
 - I. Root Ball Package. The material that surrounds the root ball during shipping.
 - J. Root Crown: The area where the majority of the main roots join the plant stem, usually at or near ground level (also known as the trunk flare). A single root emerging perpendicular from the trunk ABOVE the Root Crown and / or the swelling of the trunk at the point of a previous graft should not be considered the root crown. For trees that develop two locations, one above the other, where three or more main roots emerge from the stem, the upper set shall be considered as the root crown.
 - K. Shrub: Woody plants with mature height approximately less than 5 meters.
 - L. Spade Harvested And Transplanted: Field grown trees that are mechanically harvested and immediately transplanted to the final growing site without being removed from the digging machine.
 - M. Stem: The trunk of the tree. The portion of the plant above the roots.
 - N. Stem Girdling Root: Any root, 1/4 inch in diameter or greater, within the root package that crosses over the top of a structural root approximately tangential to the trunk circumference. Roots shall be considered as Stem Girdling that have or are likely to have root to trunk bark contact.
 - O. Structural Root: Large woody root emerging from the root crown, approximately radial to the trunk and at approximately the same depth, with a diameter approximately 1/2 to 1/3 of the root crown diameter.
 - P. Tree: Single and multi-stemmed plants with mature height approximately greater than 5 meters.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer product data and literature describing all products required by this section to the Town for approval. Provide submittal eight weeks before the installation of plants.
- B. Plant Growers Certificates: Submit Plant Growers certificates for all plants indicating that each plant meets the requirements of the specification, including the requirements root system quality, to the Town for approval. Provide submittal three weeks before the installation of plants.
- C. Samples: Submit samples of each product and material where required by the specification to the Town for approval. Label samples to indicate product, characteristics, and locations in the Work. Samples will be reviewed for appearance only. Compliance with all other requirements is the exclusive responsibility of the contractor.
- D. Plant Sources: Submit sources of all plants as required by Article – "Selection of Plants" to the Town for approval.

- E. Close Out Submittals: Submit to the Town for approval.
 - 1. Plant maintenance data and requirements.
- F. Warranty Period Site Visit Record: After each site visit during the warranty period, by the contractor, as required by this specification, submit a written record of the visit, including any problems, potential problems, and any recommended corrective action to the Town for approval.

1.5 QUALITY ASSURANCE

A. Plant Acceptance:

- 1. The Town will inspect all work for Plant Acceptance upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date of inspection.
- 2. Plant Acceptance by the Town shall be for general conformance to specified size, character and quality and not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
- 3. Any plant that is deemed defective as defined under the warranty provisions below shall not be accepted.
- 4. The Contractor is responsible for the condition and quality of work and materials during construction, and until Plant Acceptance. Contractor shall bear the total cost of replacing any and all plants until this time.

B. Warranty:

- 1. The contractor agrees to replace defective Work and plants as defined below.
- 2. Plants warranty shall begin on the date of Plant Acceptance and continue for the following periods:
 - a. Shrubs – Two (2) Years
 - b. Groundcover / Perennials – Two (2) Years
- 3. When the work is accepted in parts, the warranty periods shall extend from each of the partial acceptances to the terminal date of the last warranty period. Thus, all warranty periods for each class of warranty, shall terminate at one time.
- 4. All plants shall be warranted to be healthy, reasonably free of defects, in flourishing condition, and shall bear foliage of normal density, size, and color for the species at the end of the warranty period.
- 5. Defective Plants: Plants shall be deemed defective that are dead, diseased, insect infested, or not in a vigorous, thriving condition, during or at the end of the warranty period. The following conditions shall be deemed as indicating a defective plant.
 - a. Any plant that has a canopy or root system with 25% or more of its volume dead, diseased, insect infested, or not in a vigorous, thriving condition.
 - b. Evidence of damage to plants, which diminishes the aesthetic character and form or structural integrity of the plant or group of plants. Plants that have had more than 25% of the canopy reduced by removed limbs that were not removed under the direction of the Town.
 - c. Plants that do not meet the requirements for Stem girdling and kinked roots and proper depth of the root crown.
 - d. Plants packaged with non-biodegradable fabrics or twine that have not been removed during the planting process.

- e. Any tree that has open wounds (not completely healed over) that penetrates the cambium into the wood on trunks or major limbs, the removal of which would result in the loss of 25% or more of the structure and form of the tree.
 - f. The Town shall make the final determination that plants are defective.
6. Plants determined to be defective shall be replaced without cost to the Town, as soon as weather conditions permit and within the specified planting period.
 7. Any work required by this specification or the Town during the progress of the work, to remediate plant defects including the removal of roots or branches, or planting plants that have been bare rooted during installation to inspect for or correct root defect shall not be considered as grounds to void any conditions of the warranty. In the event that the contractor feels that such remediation work may compromise the future health of the plant, the plant or plants in question shall be rejected and replaced with plants that do not contain defects that require remediation.
 8. The Contractor is exempt from replacing plants, after Plant Acceptance and during the warranty period, that are removed by others, lost or damaged due to occupancy of project, lost or damaged by a third party, vandalism, or any natural disaster.
 9. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this specification. Make all necessary repairs due to plant replacements. Such repairs shall be done at no extra cost to the Town.
 10. The warranty of all replacement plants shall extend for an additional one-year period from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended warranty period, the Town may elect one more replacement items or credit for each item. These tertiary replacement items are not protected under a warranty period.
 11. During and by the end of the warranty period, remove all tree wrap, ties, and guying unless agreed to by the Town to remain in place. All trees that have leaned shall be straightened.
- C. Plant Final Acceptance:
1. At the end of the warranty period, the Town shall inspect all warranted work, upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date for final inspection.
 2. Plant Final Acceptance will be given only when all the requirements of this specification have been met.
- D. Contractor's Quality Assurance Responsibilities: The contractor is solely responsible for quality control of the Work.
- E. Qualified Installer: the installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the Work.
1. The bidders list for work under this section shall be approved by the Town.
 2. Installer Field Supervision: When any planting work is in progress, installer shall maintain, on site, an experienced full-time supervisor who can communicate in English with the Town.
 3. Installer's field supervisor shall have certification from the Professional Landcare Network: Certified Landscape Technician - CLT-Exterior.
 4. The installer's crew shall be experienced in the installation of plantings and large trees and interpretation of planting plans.

5. Submit references of past projects, employee training certifications that support that the contractor meets all of the above installer qualifications.
- F. Regulatory requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of federal, State and municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.

1.6 SELECTION AND INSPECTION OF PLANTS

- A. Submit to the Town, for approval, Plant Sources including the names and locations of nurseries proposed as sources of acceptable plants, and a list of the plants they will provide. The plant list shall include the botanical and common name and the size at the time of selection. Inspect all nursery materials to determine that the materials meet the requirements of this section.
- B. Trees shall be purchased from the growing nursery. Re-wholesale plant suppliers shall not be used as sources unless the contractor can certify that the required trees are not directly available from a growing nursery. When Re-wholesale suppliers are utilized, the contractor shall submit the name and location of the growing nursery from where the trees were obtained by the re-wholesale seller. The re-wholesale nursery shall be responsible for any required plant quality certifications.
- C. Schedule with the Town, trips for viewing plants at nurseries. Ensure that there is sufficient material of the required size, quality and quantity at the nursery before scheduling a trip. The trips to the nurseries shall be efficiently arranged to allow the Town to maximize viewing time. Where possible each trip should include visiting more than one nursery. Compliance with all other requirements is the exclusive responsibility of the contractor.
- D. The contractor shall require the grower or re-wholesale supplier to permit the Town to inspect the root system of all plants including random removal of soil around the base of the plant. Inspections may be as frequent and as extensive as needed to verify that the plants meet the requirements of the specifications and conform to the grower's root quality certifications.
 1. For field grown plants, viewing of plants by the Town may be at the growing nursery prior to the harvesting of the plant.
- E. Each field grown tree shall have a numbered seal applied by the contractor. The seal shall be placed on a lateral branch the north side of the tree, to identify the tree orientation during the installation process. The seal shall be a tamper proof plastic seal bearing the contractors name and a unique seven-digit number embossed on the seal.
 1. Do not place seals on branches that are so large that there is not sufficient room for the branch growth over the period of the warranty.
- F. The Town may choose to attach their seal to each plant, or a representative sample. Viewing and/or sealing of plants by the Town at the nursery does not preclude the Town's right to reject material while on site. The Contractor is responsible for paying any up charge for the Town to attach their seal to specific plants.
- G. Where requested by the Town, submit photographs of plants or representative samples of plants. Photographs shall be legible and clearly depict the plant specimen. Each submitted image shall contain a height reference, such as a measuring stick. The approval of plants by the Town via photograph does not preclude the Town's right to reject material while on site.
- H. Growing nurseries shall be located in USDA plant cold hardiness zones 5-6; USDA plant heat hardiness zones 4-5 and no more than 250 miles from the project site.

1.7 PLANT SUBSTITUTIONS FOR PLANTS NOT AVAILABLE

- A. Submit all requests for substitutions of plant species, or size to the Town, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in the search for the required plant and a record of other attempts to locate the required material. Request shall also include sources of plants found that may be of a smaller or larger size than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution.

1.8 SITE CONDITIONS

- A. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Town, in writing, of any circumstances that would negatively impact the health of plantings. Do not proceed with work until unsatisfactory conditions have been corrected.
- B. It is the responsibility of the Contractor to be familiar with the local growing conditions, and if any specified plants will be in conflict with these conditions. Report any potential conflicts, in writing, to the Town.
- C. This specification requires that work in Section 32 91 10, Topsoil, be completed and accepted prior to the installation of any plants.
- D. Do not install plants into saturated or frozen soils. Do not install plants during inclement weather, such as rain or snow or during extremely hot, cold or windy conditions.

1.9 PLANTING AROUND UTILITIES

- A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.
- B. Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.
- C. Notification of *Local Utility Locator Service* is required for all planting around utilities: Notification of “Call Before You Dig” , tel.: 1-800-922-4455, is required for all planting: The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the “Call Before You Dig” service.

PART 2 – PRODUCTS

2.1 PLANTS: GENERAL

- A. Standards and measurement: Provide plants of quantity, size, genus, species, and variety or cultivars as shown and scheduled in contract documents.
 - 1. All plants shall conform to ANSI Z60.1 “American Standard for Nursery Stock”, unless modified by provisions in this specification. In the event that there is a conflict between this specification and ANSI Z60.1, this specification section shall be considered correct.
 - 2. Caliper measurement shall be taken at a point on the trunk 6 inches above root crown for trees smaller than 4" in caliper, and at a point 12" above the root crown for trees 4" in caliper or larger.
 - 3. Plants larger than specified may be used if acceptable to the Town. Use of such plants shall not increase the contract price. If larger plants are accepted the root ball size shall be increased in proportion to the size of the plant. Larger plants may not be acceptable if the resulting root ball cannot be fit into the required planting space.
 - 4. If a range of size is given, no plant shall be less than the minimum size and not less than 50

percent of the plants shall be as large as the maximum size specified. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required.

B. Plant Quality:

1. General: Provide healthy, vigorous stock, grown in a recognized nursery and reasonably free of disease, insects, eggs, bores, and larvae. At the time of planting all plants shall have root system, stem, and branch form that will not restrict normal growth, stability and vigor for the expected life of the plant.
2. Plant quality above the soil line:
 - a. Plants shall be of exceptional quality with the color, shape, size and distribution of trunk, stems, branches, buds and leaves normal to the plant type specified.
 - b. Trees shall not have co dominant leaders or significant branch unions with included bark between stems. All trees are assumed to be single leader plants unless a different form is specified in the plant list or drawings.
 - c. Tree trunks shall be reasonably straight with lateral limbs reasonably symmetrical and evenly distributed along the trunk.
 - d. The trunk and branches shall be reasonably free of knots, scrapes, broken or split wood, fresh limb cuts, sunscald, injuries, and abrasions. All graft unions, where applicable, shall be completely healed without visible sign of graft rejection. All grafts shall be visible above the soil line.
3. Plant quality at or below the soil line:
 - a. The roots shall be reasonably free of scrapes, broken or split wood.
 - b. A minimum of three structural roots reasonably distributed around the trunk shall be found in each plant.
 - 1.) Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
 - c. The root crown must not be more than 2 inches below the soil line. The top two structural roots shall be no more than 3 inches below the soil line and the rest of the structural roots shall be no more than 5 inches below the soil line when measured 4 inches radial to the trunk. The grower may request a modification to this requirement for species with roots that rapidly descend, provided that the grower removes all circling roots above the structural roots across the top of the root ball.
 - d. The root system shall be reasonably free of stem girdling roots above the root collar, vertical roots and or kinked roots from nursery production practices. Stem girdling roots, vertical and kinked roots include roots on the interior of the root ball.
 - 1.) The final plant grower shall be responsible to have determined that the plants have been root pruned at each step in the plant production process to remove stem girdling roots and kinked roots, or that the previous production system use Root Safe Containers or practices that produce a root system throughout the root ball that meets these specifications. Regardless of the work of previous growers, the plant's root system shall be modified at the final production stage to produce the require plant root quality. The final grower shall certify in writing that all plants are reasonably free of stem girdling and kinked roots as defined in this specification, and that the tree has been grown and harvested to produce a plant that meets these specifications.

C. Submittals: Submit for approval the required plant quality certifications from the grower where plants are to be purchased, for each plant type. The certification must state that each plant meets all the above plant quality requirements.

1. The grower's certification of plant quality does not prohibit the Town from inspecting any plant

or rejecting the plant if it is found to not meet the specification requirements.

2.2 **ROOT BALL PACKAGE OPTIONS:** The following root ball packages are permitted. Specific Root Ball Packages shall be required where indicated on the plant list or in this specification. Any type of Root Ball Packages that is not specifically defined in this specification shall not be permitted.

A. BALLED AND BURLAPPED PLANTS

1. All Balled and Burlapped Plants shall be field grown, and the root ball packaged in a burlapped and twine and or burlap and wire basket package.
2. Plants shall be harvested with the following modifications to standard nursery practices.
 - a. Prior to digging any tree, using hand tools or an air spade, carefully removed the soil from the top of the root ball of each plant to locate the root crown. Care must be exercised not to damage the surface of the root crown and the top of the structural roots.
 - b. Balled and burlapped trees shall be dug prior to leafing out (bud break) in the spring or during the fall planting period except for plants know to be considered as fall planting hazards. Plants that are fall planting hazards shall only be dug prior to leafing out in the spring. Plants to be shipped or installed when in leaf shall be pre-dug prior to bud break and stored appropriately protected storage yards with adequate water.
 - c. If wire baskets are used to support the root ball, a “low profile” basket shall be used. A low profile basket is defined as having the top of the highest loops on the basket no less that 4 inches and no greater than 8 inches below the shoulder of the root ball package.
 - d. Twine and burlap used for wrapping the root ball package shall be natural, biodegradable material. If the burlap decomposes during the storage period the root ball shall be re-wrapped prior to shipping.

B. CONTAINER GROWN PLANTS

1. Container grown plants may be permitted only when indicated on the drawing, this specification or approved by the Town.
2. Provide plants established and well rooted in removable containers
3. Container class size shall conform to ANSI Z60.1 for container plants for each size and type of plant.
4. Container-grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its potting medium together but not so long as to have developed Stem Girdling or matted, circling around the edge of the container. Plants that fail to meet this requirement may be modified to correct deficiencies as describe in Part 3 Execution if approved by the Town.

C. CONTAINERIZED PLANTS

1. Containerized plants may be permitted only when indicated on the drawing, this specification or approved by the Town.
2. Provide field grown plants in containers of similar size as the ANSI Z60.1 requirements for Balled and Burlapped plants.
3. Place the field grown plant in the container at the correct depth of the root crown as defined in section Plants: General, sub paragraph Quality, above.
4. Containerized plants shall not held in the container more than 12 months.

5. Remove all stem girdling above the root collar or circling roots around the edge of the container prior to planting as describe in Part 3 Execution if approved by the Town.

2.3 MULCH

- A. Mulch shall be natural brown cedar mulch. Material shall be mulching grade, uniform in size and foreign matter. Wood content shall not exceed 15% by volume. Mulch that has become saturated with water and presents an anaerobic odor shall be rejected.
- B. Submit manufacturers product data that product meets the requirements and one gallon sample for approval.

2.4 ANTI-DESICCANT

- A. Anti-Desiccant shall be emulsion type, film-forming agent similar to Dowax by Dow Chemical Company, or Wilt-Pruf by Nursery Specialty Products, Inc., Croton Falls, New York, designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer's fully identified containers and use in accordance with manufacturer's instructions.
- B. Submit manufacturers product data for approval.

2.5 CHEMICAL OR BIOLOGICAL ADDITIVES

- A. Chemical or Biological Additives: Chemicals and biological materials designed to increase soil fertility. All material shall be delivered to the site in unopened containers and stored in a dry enclosed space suitable for the material and meeting all environmental regulations. Biological additives shall be protected from extreme cold and heat. All products shall be freshly manufactured and dated for the year in which the products are to be used.
 1. Fertilizer: Fertilizer for planting shall be organic fertilizer with a salt index of 25 or less. The majority of the nutrient elements are from organic sources. Fertilizer selections shall be based on the recommendations of the soil test.
 2. Submit manufacturers product data for approval.
 - 1.) Recommended in soil reports from a qualified soil-testing agency.
 3. Hydrogel Soil Amendment:: Shall be Terra-Sorb Hydrogel, an acrylamide copolymer gel, of Medium or Coarse Grade, as supplied by Plant Health Care, Inc., 440 William Pitt Way, Pittsburgh, PA 15238, tel 800-421-9051, or approved equal.
 - a. Submit manufacturers product data for approval.

PART 3 – EXECUTION

3.1 SITE EXAMINATION

- A. Examine the surface grades and soil conditions to confirm that the requirements of Specification Section – Planting Soil and the soil and drainage modifications indicated on the Planting Soil Plan and Details have been completed. Notify the Town in writing of any unsatisfactory conditions.

3.2 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from deterioration during delivery and storage. Adequately protect plants from drying out, exposure of roots to sun, wind or extremes of heat and cold temperatures. If planting is delayed more than 24 hours after delivery, set plants in a location protected from sun and wind. Provide adequate water to the root ball package during the shipping and storage period.
 1. Using a soil moisture meter, periodically check the soil moisture in the root balls of all plants to assure that the plants are being adequately watered.

- B. Do not deliver more plants to the site than there is space with adequate storage conditions. Provide a suitable remote staging area for plants and other supplies.
 - 1. The Town shall approve the duration, method and location of storage of plants.
- C. Provide protective covering over all vehicles during delivery of all plants.
- D. Before shipping, apply 1/8 inch thick, wax sealed, corrugated cardboard trunk protection around the trunk of all trees from the top of the root ball package to the first branch. Cardboard shall be coated to reduce water penetration, and fabricated for this application. Secure the cardboard with plastic tape.
- E. If trees are moved when in full-leaf, spray with anti-desiccant per manufacturer's recommendations at nursery no greater than 48 hours prior to digging, and again two weeks after transplanting. Spraying should take place in early morning hours with foliage at maximum turgidity.

3.3 PLANTING SEASON

- A. Planting shall only be performed when weather and soil conditions are suitable for planting the materials specified in accordance with locally accepted practice. Install plants during the planting time as described below unless otherwise approved in writing by the Town. In the event that the contractor request planting outside the dates of the planting season, approval of the request does not change the requirements of the warranty.
 - 1. Deciduous trees and shrubs April 1 to June 15 and September 1 to December 1
 - 2. Evergreen trees and shrubs April 1 to June 15 and September 1 to October 15.
 - 3. Plants identified as "Fall Planting Hazards" shall not be installed unless they have been secured as "Spring Dug Material", certified by the Nursery.

3.4 COORDINATION WITH PROJECT WORK

- A. The Contractor shall coordinate with all other work that may impact the completion of the work.
- B. Prior to the start of Work, prepare a detailed schedule of the work for coordination with other trades.
- C. Coordinate the relocation of any irrigation lines, heads or the conduits of other utility lines that are in conflict with tree locations. Root balls shall not be altered to fit around lines. Notify the Town of any conflicts encountered.

3.5 LAYOUT AND PLANTING SEQUENCE

- A. When applicable, plant trees before other plants are installed. Where spacing dimensions or locations are not clear, notify the Town before installation.
- B. Notify the Town, one (1) week prior to layout. Lay out all individual tree and shrub locations. Place plants above surface at planting location or place a labeled stake at planting location. Layout bed lines with paint for the Town's approval. Secure the Town's acceptance before digging and start of planting work.
- C. It is understood that plants are not precise objects and that minor adjustments in the layout will be required as the planting plan is constructed. These adjustments may not be apparent until some or all of the plants are installed. Make adjustments as required by the Town including relocating previously installed plants.

3.6 SOIL PROTECTION DURING PLANT DELIVERY AND INSTALLATION

- A. Protect soil from compaction during the delivery of plants to the planting locations, digging of planting holes and installing plants.
 - 1. Where possible deliver and plant trees to that require the use of heavy mechanized equipment

prior to final soil preparation and tilling.

2. Till and restore grades to all soil that has been driven over or compacted during the installation of plants.

3.7 INSTALLATION OF PLANTS: GENERAL

- A. Inspect each plant after delivery and prior to installation for damage of other characteristics that may cause rejection of the plant. Notify the Town of any condition observed.
- B. The root system of each plant, regardless of root ball package type, shall be inspected by the contractor, at the time of planting to confirm that the roots meet the requirements for plant root quality in Part 2 Products: Plants General: Quality. The contractor shall undertake at the time of planting, all modifications to the root system required by the Town to meet these quality standards.
 1. Modifications, at the time of planting, to meet the specifications for the depth of the root crown and removal of stem girdling roots and circling roots may make the plant unstable or stress the plant to the point that the Town may choose to reject the plant rather than permitting the modification.
 2. Any modifications required by the Town to make the root system conform to the plant quality standards outlined in Part 2 Products: Plants General: Quality or other requirements related to the permitted root ball package shall not be considered as grounds to modify or void the plant warranty.
 3. The contractor remains responsible to confirm that the grower has made all required root modifications noted during any nursery inspections.
- C. Container Root Ball Shaving: The outer surfaces of ALL plants in containers, including the top, sides and bottom of the root ball shall be shaved to remove all circling and matted roots. Shaving shall be performed using saws, knives, sharp shovels or other suitable equipment that is capable of making clean cuts on the roots. Shaving shall remove a minimum of one inch of root mat or deeper as required to remove all roots that are not growing reasonably radial to the trunk and all kinked and vertical roots.
- D. Exposed Stem Tissue after Modification: The required root ball modifications may result in stem tissue that has not formed trunk bark being exposed above the soil line. If such condition occurs, wrap the exposed portion of the stem in a protective wrapping such as Dewitt Tree Wrap fabric. Secure the fabric with biodegradable tape such as "3M Scotch 234 or 232" masking tape. DO NOT USE string, twine or any other material that may girdle the trunk if not removed.
- E. Using hand tools, back hoe or mini-excavator, excavate the planting hole into the Planting Soil to the depth of the root ball measured after any root ball modification to correct root problems, and wide enough for working room around the root ball or to the size indicated on the drawing.
 1. The measuring point for root ball depth shall be the average height of the outer edge of the root ball after any required root ball modification.
 2. Planting holes may not be dug with a mechanical auger.
- F. For trees to be planted in prepared Planting Soil that is deeper than the root ball depth, compact the soil under the root ball using a mechanical tamper to assure a firm bedding for the root ball. If there is more than 12 inches of planting soil under the root ball excavate and tamp the planting soil in lifts not to exceed 12".
- G. Set top outer edge of the root ball at the average elevation of the proposed finish. Set the plant plumb. The tree graft, if applicable, shall be visible above the grade. Do not place soil on top of the root ball.

- H. Trees shall be oriented so their north side, as marked in the nursery, faces north. The Architect may require trees to be oriented slightly in another direction based on the form of the tree or other conditions.
- I. Brace root ball by tamping Planting Soil around the lower portion of the root ball. Place additional Planting Soil around base and sides of ball in six-inch (6") lifts. Lightly tamp each lift using hand tools to settle backfill and eliminate voids.
- J. Where indicated on the drawings, build a 3" high, level saucer of Planting Soil around the outside of the root ball to retain water. Tamp the saucer to reduce erosion of the saucer.
- K. Thoroughly water the Planting Soil and root ball immediately after planting
- L. Remove all nursery plant identification tags and ribbons. The Town's seals are to remain on plants until the end of the warranty period.
- M. Remove corrugated cardboard trunk protection after planting.
- N. Follow additional requirements for the permitted root ball packages.

3.8 PERMITTED ROOT BALL PACKAGES AND SPECIAL PLANTING REQUIREMENTS

- A. The following are permitted root ball packages and special planting requirements that shall be followed during the planting process in addition to the above General planting requirements.

B. BALLED AND BURLAPPED PLANTS

1. After the root ball has been backfilled, remove all twine and burlap from the top of the root ball. Cut the burlap away, do not fold down onto the Planting Soil.
2. If the plant is shipped with a wire basket that does not meet the requirements of a "Low Rise" basket, remove the top 6-8 inches of the basket wires just before the final backfilling of the tree.

C. CONTAINER GROWN PLANTS

1. This specification assumes that most container plants have significant stem girdling and circling roots, and that the root crown is too low in the root ball.
2. Remove the container.
3. Cut all circling roots on the perimeter of the root ball such that the roots are emerging out to remaining root system are oriented approximately radial to the trunk.
4. Remove all roots and potting soil above the root crown and the main structural roots.
5. Remove all potting soil at the bottom of the root ball that does not contain roots.
6. Using a hose, power washer or air knife, wash out the potting mix from around the trunk and top of the remaining root ball and find and remove all stem girdling roots within the root ball above the top of the structural roots.
7. The resulting root ball may need additional staking and water after planting. The Town may reject the plant if the root cutting process makes the tree unlikely to be vigorous at the end of the warranty period.

D. CONTAINERIZED PLANTS

1. Remove the container.
2. Cut all circling roots on the perimeter of the root ball such that the roots are emerging out to remaining root system are oriented approximately radial to the trunk.

3. Remove all roots, root mat and potting soil above the root crown and the main structural roots.
4. Remove all potting soil at the bottom of the root ball that does not contain roots.

3.9 TREE STAKING AND GUYING

- A. Do not stake or guy trees unless specifically required by the Contract Documents, or in the event that the Contractor feels that staking is the only alternative way to keep particular trees plumb.
 1. The Town shall have the authority to require that trees are staked or to reject staking as an alternative way to stabilize the tree.
 2. Trees that have had heavily modified root balls to meet the root quality standards may become unstable. The Town may choose to reject these trees rather than utilize staking to temporarily support the tree.
- B. Trees that are guyed shall have their guys and stakes removed after one full growing season or at other times as required by the Town.
- C. Tree guying shall utilize the tree staking and guying materials specified. Guying to be tied in such a manner as to create a minimum 12" loop to prevent girdling. Refer to manufacturer's recommendations for installation. Plants shall stand plumb after staking or guying.

3.10 STRAIGHTENING PLANTS

- A. Maintain all plants in a plumb position throughout the warranty period. Straighten all trees that move out of plumb including those not staked. Plants to be straightened shall be excavated and the root ball moved to a plumb position, and then re-backfilled.
- B. Do not straighten plants by pulling the trunk with guys.

3.11 INSTALLATION OF FERTILIZER AND OTHER CHEMICAL ADDITIVES

- A. Do not apply any fertilizer to plantings during the first year after transplanting unless soil test determines that fertilizer or other chemical additives is required. Apply chemical additives only upon the approval of the Town.
- B. Fertilizers shall be applied according to the manufacturer's instructions and standard horticultural practices.

3.12 PRUNING OF TREES AND SHRUBS

- A. Prune plants as directed by the Town. In general, preserve the natural character of the plant and follow recommendations in "An Illustrated Guide to Pruning, Second Edition".
- B. All pruning shall be performed by a person experienced in landscape pruning.
- C. Wherever possible and appropriate to the species, preserve or create a central leader.
- D. Pruning of large trees shall be done using pole pruners or if needed, from a ladder or hydraulic man lift to gain access to the top of the tree. Do not climb in newly planted trees
- E. Remove and replace excessively pruned or malformed stock resulting from improper pruning.
- F. Pruning shall be done with clean, sharp tools.
- G. No tree paint or sealants shall be used.

3.13 MULCHING OF PLANTS

- A. Apply 2 inches minimum of mulch top of root balls and planting beds, covering the entire planting

bed area. Do not install mulch any closer than 8 inches to the trunk.

- B. For tree planted in lawn areas the mulch shall extend to a 6' diameter around the tree or to the extent indicated on the plans. Cut a clean, smooth edge between the mulch and lawn.
- C. Lift all leaves, low hanging stems and other green portions of small plants out of the mulch if covered.

3.14 WATERING

- A. The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Plant Acceptance. The contractor shall adjust the automatic irrigation system, if available and apply additional water, using hoses as required.
- B. Hand water root balls of all plants to assure that the root balls have adequate moisture. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.

3.15 CLEAN-UP

- A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day.
- B. Once installation is complete, wash all soil from pavements and other structures. Ensure that mulch is confined to planting beds and that all tags and flagging tape are removed from the site. The Town seals are to remain on the trees and removed at the end of the warranty period.

3.16 PROTECTION DURING CONSTRUCTION

- A. The Contractor shall protect landscape work and materials from damage due to planting operations, operations by other Contractors or trespassers. Maintain protection during installation until Plant Acceptance. Treat, repair or replace damaged planting work immediately.
- B. Damage done by the Contractor, or any of their sub contractors to plants, or any other parts of the work, shall be replaced by the Contractor at no expense to the Town.

3.17 PLANT MAINTENANCE PRIOR TO PLANT ACCEPTANCE

- A. During the project work period and prior to Plant Acceptance, the Contractor shall maintain all plants.
- B. Maintenance during the period prior to Plant Acceptance shall consist of pruning, watering, cultivating, weeding, mulching, removal of dead material, repairing and replacing of tree stakes, tightening and repairing of guys, repairing and replacing of damaged tree wrap material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings reasonably free of insects and disease, and in healthy growing condition. The threshold for applying insecticides and herbicide shall follow established Integrated Pest Management (IPM) procedures. Mulch areas shall be kept reasonably free of weeds, grass.

3.18 MAINTENANCE DURING THE WARRANTY PERIOD

- A. During the warranty period, provide all maintenance for all plantings to keep the plants in a healthy state and the planting areas clean and neat.
- B. General requirements:
 - 1. All work shall be undertaken by trained landscape crews under the supervision of a foreman with a minimum of 5 years experience supervising commercial landscape maintenance crews.
 - 2. All chemical and fertilizer applications shall be made by licensed applicators for the type of chemicals to be used. All work and chemical use shall comply with all applicable local,

provincial and federal requirements.

3. Assure that hoses and watering equipment and other maintenance equipment does not block paths or be placed in a manner that may create tripping hazards. Use standard safety warning barriers and other procedures to maintain the site in a safe manner for visitors at all times.
3. All workers shall wear required safety equipment and apparel appropriate for the tasks being undertaken.
4. The contractor shall not store maintenance equipment at the site at time when they are not in use.
5. Maintenance vehicles shall not park on the site including walks and lawn areas at any time without the Town's written permission.
6. Maintain a detailed log of all maintenance activities including types of tasks, date of task, types and quantities of materials and products used, watering times and amounts, and number of each crew. Periodically review the logs with the Town, and submit a copy of the logs at the end of each year of the maintenance agreement.
7. Meet with the Town a minimum of three times a year to review the progress and discuss any changes that are needed in the maintenance program. At the end of the warranty period attend a hand over meeting to formally transfer the responsibilities of maintenance to the Town. Provide all information on past maintenance activities and provide a list of critical tasks that will be needed over the next 12 months. Provide all maintenance logs and soil test data. Make the contractor's supervisor available for a minimum of one year after the end of the warranty period to answer questions about past maintenance.

C. Provide the following maintenance tasks:

1. Watering; Provide all water required to keep soil within and around the root balls at optimum moisture content for plant growth.
 - a. Maintain all watering systems and equipment and keep them operational. Monitor soil moisture to provide sufficient water. Check soil moisture and root ball moisture with a soil moisture meter on a regular basis and record moisture readings. Do not over water.
2. Soil nutrient levels: Take a minimum of 4 soil samples from around the site in the spring and fall and have them tested by a recognize soil testing lab for chemical composition of plant required nutrients, pH, salt and % organic matter. Test results shall include laboratory recommendations for nutrient applications. Apply fertilizers at rates recommended by the soil test.
3. Plant pruning: Remove cross over branching, developing co dominant leaders, dead wood and winter-damaged branches. Do not over prune or shear plants.
4. Restore plants: Reset any plants that have settled or are leaning as soon as the condition is noticed.
5. Guying: Remove tree guys and staking after the first full growing season.
6. Weed control: Keep all beds reasonably free of weeds. Hand remove all weeds and any plants that do not appear on the planting plan. Chemical weed control is permitted only with the approval of the Town. Schedule Weeding as needed but not less than 5 times a year.
8. Trash removal: Remove all trash and debris from all planting beds and maintain the beds in a neat and tidy appearance. The number of trash and debris removal visits shall be no less than 5 times per year and may coincide with other maintenance visits.

9. Disease and insect control: Provide Integrated plant management (IPM) program to maintain disease and insects at acceptable and manageable levels. Manageable levels shall be defined as minimum damage to plants. Use least invasive methods to control plant disease and insect outbreaks. The Town must approve in advance the use of all chemical pesticide applications.
10. Plant replacement: Replace all plants that are defective as defined in the warranty provisions, as soon as the plant decline is obvious and in suitable weather and season for planting.
12. Mulch: Refresh mulch once a year to maintain complete coverage. Do not over mulch. At no time shall the over all mulch thickness be greater than 2 inches. Do not apply mulch against the trunks or stems of any plants. Replacement mulch shall meet the requirements of the original approved material.
13. Leaf, fruit and other plant debris removal: Remove fall leaf, spent flowers, fruit and plant part accumulations from beds and paved surfaces. Maintain all surface water drains free of debris. Debris removal shall be undertaken at each visit to weed or pick up trash in beds
14. Damage from site use: Repair of damage by site visitors and events, beyond normal wear, are not part of this maintenance. The Town may request that the contractor repair damage beds or plantings for an additional cost. All additional work shall be approved in advance by the Town.

END OF SECTION 02931