NOTE TO CONSULTANTS: Edit with Track Changes turned on, any text in this section that appears in bold and italics then turn off the bold and italics for the final approved version. This Specification must be edited for each project's special conditions. Do not include these instructions in the Contract Documents).

NOTE: At the beginning of the design process the Consultant is required to download from the SPR Design Standards web site at www.cityofseattle.gov/parks/projects/standards, the Landscape Planting Design, read that document and then incorporates the principals therein as part of the design process.

NOTE: Additional soil tests may be required if substantial disturbance of the native soils has occurred (to be determined by the Park Engineer). Conditions constituting substantial disturbance include extensive grading due to building and road construction or cuts and fills over 25 cubic yards.

Soil tests are required during site investigations early in the design process and after preparation of sub-grade is completed, to determine the best methods for soil preparation and the planting of trees, shrubs, and ground covers. **Every effort shall be made to salvage and reuse existing site soils if they are determined to be acceptable though the testing process.** Specify on the drawings and in the specifications which approach you intend to take related to soil types and preparation methods and edit the SPR Standard Specifications, Section 32 91 13 - Soil Preparation accordingly. The attached Standard Specifications represent the minimum acceptable standards for design. They are intended to be consistent with and used in conjunction with the Landscape Planting/Staking - Standard Details. The Engineer (the Park Engineer and/or the Engineering & Technical Services Section) and the Consultant will decide which Soil Preparation method shall be included in the Specifications and used during construction. It is anticipated that site conditions may change during construction and that the Consultant will take this into account, thus requiring the Contractor to not use unacceptable backfill materials in the proposed planting areas. Silt, clay, crushed rock, builder's sand, and construction debris are considered unacceptable backfill materials in planting areas.

The Consultant shall not make any changes (add, delete or alter) to these Standard Specifications unless otherwise approved by SPR prior to its inclusion in the Contract Documents. However, the Consultant has the added responsibility to not only comply with these specifications, but to also expand them as required, or as dictated and/or warranted by the following:

A. Special conditions for each project or site
B. Environmental considerations or constraints
C. The integrity of the proposed design
D. Potential adverse impacts to maintenance resources
E. The health, safety, and welfare of the general public, etc.

All Standard Details that are part of these specifications shall be used as shown (without any alterations) and shall be included as part of the Contract Documents.

The Consultant shall show to SPR Engineering and Design Section staff that all relevant (to the particular project) specifications have been included in the Contract Documents.

The following summary is included to help clarify those activities that are required to be performed during the construction phase:

1. Inspection of plants at the nursery before delivery to the site (the Consultant Landscape Architect & SPR Landscape Architect).
2. Inspection of plants at the site before installation (Consultant Landscape Architect & SPR Landscape Architect).
3. Stake plant locations (Consultant and Contractor).
4. Preliminary Inspections with development of punch list items (the Consultant and SPR representatives).
5. Substantial Completion Inspection with physical punch list items completed (Final) (the Consultant and SPR Representatives).

*******SUBSTANTIAL COMPLETION*******

6. Maintenance Period ***(varies, usually 30 to 60 days)*** with maintenance and replacement of plants as required or directed (Contractor and Consultant).
7. Memo to Contractor and SPR (Park Engineer) transferring plant maintenance to Parks' Operations Division at the end of the maintenance period (the Project Manager).

*******PHYSICAL COMPLETION*******

8. Warranty Period - One-year after Physical Completion date for materials and workmanship (the Consultant documents in writing to the Parks' Engineer).
9. Final Site Meeting and completion of any warranty replacement items during the warranty period (the Consultant, the Contractor, and SPR representatives as appropriate).
10. Final Transfer to the Owner - One Year after date of Physical Completion and all outstanding warranty items are completed (the Project Manager and Park Engineer).

PART 1 - GENERAL

1.01 Description: Provide planted trees, shrubs and ground covers as shown and specified. The work includes but is not limited to:

A. Soil Preparation and/or Installing Specified Planting Soils.

B. Plant Materials and Planting.

C. Fertilizing and Mulching.

D. Tree Staking.

E. Maintenance and Establishment Procedures.

F. Plant Warranties.

1.02 Related Sections: All work of the Contract shall be performed in coordination with the requirements of the following sections:

Section 31 00 00 - Earthwork
Section 32 91 13 - Soil Preparation

1.03 References:

A. All construction shall be in accordance with the City of Seattle (COS) Standard Plans and Specifications (most recent editions).

B. The Seattle Parks & Recreation (SPR) Standard Specifications and Details (most recent edition).

C. Comply with sizing and grading standards of the "American Standards for Nursery Stock" (most recent edition).

D. Nomenclature shall conform to “Hortus Third”, compiled by the L. H. Bailey Arboretum, Cornell University, 1976.

1.04 Quality Assurance:

A. All plants shall be nursery grown or collected materials that has been held in a nursery for at least one year. Nursery climatic conditions must be similar to those in the locality of the project. All plants shall be weed free at the time of planting.

B. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable at no additional cost, and providing that the larger plants will not be cut back to size indicated. Provide plants indicated by two (2) measurements so that

only a maximum of twenty-five percent (25%) are of the minimum size indicated and seventy-five percent (75%) are of the maximum size indicated.

1.05 Submittals:

A. Submit the following material samples:

1. Topsoil submittals in accordance with Section 32 91 13.
2. Fertilizers for planting submittal in accordance with Section
3. Mulch submittal in accordance with this Section.

B. Submit the following material certifications:

1. Planting fertilizer.
2. Plant material sources.

1.06 Delivery, Storage and Handling:

A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. The Contractor shall store fertilizer in such a manner as to prevent wetting and deterioration.

B. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock. On arrival, the certificate shall be filed with the Engineer. Protect all plants from desiccation. "Wiltproof" or another antidesicant shall be applied only with approval of the Engineer. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Engineer. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

C. Cover plants transported on open vehicles with a protective covering to prevent wind-burn.

D. Provide dry, loose soils for planting. Frozen or muddy soil is not acceptable.

E. Stock shall be handled by root ball only, not the trunks, stems or tops.

1.07 Project Conditions:

A. Work Notification: Notify the Engineer at least 5 working days prior to the installation of plant materials by calling the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspection.

B. Protect existing utilities, paving, and other facilities from damage caused by planting operations.

C. Do not install plant material when ambient temperatures may drop below 35°F or above 80°F.

D. Do not install plants when wind velocity exceeds 30 MPH.

E. Confine work to designated areas. Do not disturb existing vegetation outside project limits and protect all trees, shrubs and ground covers within project limits not designated to be removed. Do not permit vehicular traffic or materials storage under or around new or existing trees.

PART 2 - PRODUCTS

2.01 Plant Materials:

A. Plants: Provide plants typical of their species or variety; with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from weeds, defects, disfiguring knots, sunscald injuries, and abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids, open spaces, broken branches, flush cuts or stubs.

1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and absorbing root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock." Cracked or mushroomed balls are not acceptable.
2. Bare-root plants: Dug with adequate fibrous roots, covered with a uniformly thick coating of mud by being puddled immediately after they are dug, or packed in moist straw, sawdust or peat moss.
3. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.
   a. No plants shall be loose in the container.
   b. Container stock shall not be pot bound.
4. No pruning wounds shall be present with a diameter of more than one (1) inch and such wounds must show vigorous callous on all edges. Trees shall not be pruned within six (6) months prior to delivery.

2.02 Soils: ***(Pick an option in consultation with the Engineer & edit as required)***

A. ***<u>Option 1</u>: All planting shall be done with native soils, when native soil is approved by the Engineer. Native soil shall be in accordance with Section 32 91 13 – Soil Preparation.***

B. ***<u>Option 2</u>: All planting shall be done with a mix of 50% native soil and 50% specified Planting Soil or Organic Amendment when the existing native soil is determined to require amending per Section 32 91 13.***

C. ***<u>Option 3</u>: All planting shall be done with 100% specified Planting Soil (purchased and prepared off site) when the existing soil is determined to be unacceptable per Section 32 91 13.***

2.03 Planting Fertilizers:

A. Fertilizers shall be according to the following:

1. ***<u>Use (20-10-5+ minors) TURFGRO, "GROPACS" Fertilizer Packets</u> (or, approved equal) with the following characteristics:***

Total Nitrogen (N)	***20.0%***
(18% Urea Nitrogen)	
(2.0% Ammoniacal Nitrogen)	
Available Phosphate (P_20_5)	***10.0%***
Soluble Potash (K_20)	***5.0%***
Calcium (Ca)	***3.0%***
Magnesium (Mg)	***2.0%***
Sulfur (S)	***3.0%***
Boron (B)	***0.04%***
Copper (Cu)	***0.20%***
Iron (Fe)	***1.0%***
Manganese (Mn)	***0.10%***
Zinc (Zn)	***0.10%***

(Or)

2. ***<u>Use Planting Fertilizer (7-4-9) 'Rainy Pacific NW Blend</u>', shall be 100% Organic Fertilizer as manufactured by Walt's Organic Fertilizer Co., or approved equal, and shall be composed of the following:***

Total Nitrogen* (N)	***7%***
(0.5% nitrate nitrogen (N))	
(6.5% water insoluble nitrogen (N))	
Available Phosphoric Acid (P_2O_5)	***4%***
Soluble Potash (K_2O)	***9%***
Calcium	***7%***

****Shall be derived from fish meal, crab meal fines, kelp meal, fish bone meal, and agricultural gypsum.***

B. Recommended Sources for Planting Fertilizers:

1. <u>WILCO</u>, 922 Valley Avenue East, Suite 103, Puyallup, WA 98371, Ph. (253) 841-3378, Fax. (253) 841-8549.
2. <u>HORIZON DISTRIBUTION</u>, Bellevue, WA, Ph. 425-828-4554, Fax 425-822-0419.
3. <u>WILBUR-ELLIS</u>, 16300 Christensen Road, Tukwila, WA 98188-3418, Ph. (206) 439-9950.
4. Or, approved equal. (Provide manufacturer's written analysis by way of substitution request, for approval by the Engineer, prior to delivery).

2.04 ***Optional Supplemental Mycorrhizal Amendment (3-3-4) 'EndoROOTS', shall be 100% Organic as manufactured by Roots, Inc, or approved equal, and shall be composed of the following:***

Total Nitrogen* (N)	***3.0%***
(0.5% water soluble nitrogen (N))	
(2.5% water insoluble nitrogen (N))	
Available Phosphate (P_2O_5)	***3.0%***
Soluble Potash (K_2O)	***4.0%***
Calcium (Ca)	***9.0%***
Magnesium (Mg)	***0.8%***
(0.8% water soluble Magnesium (Mg))	
Sulfur (S)	***1.5%***
(1.5% combined Sulfur (S))	
Iron (Fe)	***1.0%***

****Shall be derived from composted poultry manure, ferrous sulfate, and potassium sulfate. Non-plant food ingredients: Kelp meal, humus, vitamins, amino-acids, and EndoMycorrhiza spores. Recommended Source for Endo ROOTS is: WILCO, 922 Valley Avenue East, Suite 103, Puyallup, WA 98371, Ph. (253) 841-3378, Fax. (253) 841-8549.***

2.***05*** ***Optional Root Barriers: In locations as shown on the plans and details, root barrier material shall be installed at 18 inch deep, interlocking reinforced polypropylene panels, or approved equal. Recommended sources for root barriers are as follows:***

A. ***"RP" Series - Root Barrier Panels, as manufactured by NDS, and distributed locally by Frank J. Martin Company, Lynnwood, WA, Ph. 206-523-7665, toll free 1-800-654-1786 or www.fjmartin.com.***

B. ***"DeepRoot", as manufactured by Deep Root, Inc., and distributed locally by Berkey Supply, Inc., Woodinville, WA, Ph. 425-487-3310 or www.berkeysupply.com.***

C. ***"Biobarrier", as manufactured by BBA Nonwovens Reemay, Inc., and distributed locally by Wilber Ellis, Auburn, WA, Ph. 253-351-6591 or www.wilberellis.com.***

2.06 Mulches:

A. Mulches shall be according to the following:

1. ***Option 1 - for Annual & Perennial plantings only: Fertile Mulch shall be steer waste or bio-solids mixed with sawdust ("Steerco", "Growco" or "Fertile Mulch").***

2. ***Option 2 - for some "Ornamental" Shrub Bed plantings: Bark Mulch shall be fine ground fir or hemlock bark.***

3. ***Option 3 - for most General Shrub Beds, all Native Plantings and all Natural Areas Restoration Plantings: Arborist Wood Chip Mulch shall be coarse ground wood chips (approximately 1/2" to 4" along the longest dimension) derived from the mechanical grinding or shredding of whole trees or portions of trees. It may contain wood, wood fiber, roots, bark, branches, and leaves, but may not contain visible amounts of soil. It shall***

be free of weeds and weed seeds, and may not contain more than 1% by weight of manufactured inert material (plastic, concrete, ceramics, metal, etc.). Arborist wood chip mulch, when tested, shall meet the following loose volume gradation:

	Percent Passing	
Sieve Size	***Minimum***	***Maximum***
2"	***95***	***100***
No. 4	***0***	***20***
No. 200	***0***	***5***

Acceptable substitutes, subject to the engineer's approval, include chipped or shredded woody material, meeting the above size and inert material requirements, derived from composting operation screening ("overs"), or derived from recycling of clean dimensional lumber (e.g. pallets or framing lumber) that has passed through a metal removal process to meet the 1% manufactured inert standard above.

PART 3 - EXECUTION

3.01 Inspections:

A. Finish grading shall be inspected and approved by the Consultant and the Engineer prior to any planting.

B. Plant material shall be inspected and approved by the Consultant and the Engineer at the nursery or site prior to installation. The Contractor shall remove all unsatisfactory material from the site immediately and his/her own expense.

3.02 Preparation: Contractor shall locate plants by staking with stakes and flags as indicated on the Drawings or as approved in the field. If obstructions are encountered that are not shown on the drawings, do not proceed until the Consultant and the Engineer have approved the locations or selected alternate plant locations.

3.03 Installation Procedures:

A. Plants brought to the planting site shall be bare root, balled and burlapped, or in containers, depending on how specified in the planting schedule in the Contract for the particular type of planting Material. Plants shall not be planted during freezing weather or when the ground is frozen. Plants shall not be planted during excessively wet conditions. Plants shall not be placed on any day in which temperatures are forecast to exceed 80 degrees unless the Engineer approves otherwise. Plants shall not be placed in areas that are below finished grade.

B. Dates to plant: Planting trees, shrubs, and groundcovers within an SPR project site shall be performed during the period between **October 1 and April 30**. **Planting at**

other times shall only by done by written permission by the Engineer and only if an automatic irrigation system is available at the site at the time of planting.

C. Plants shall be removed from containers in a manner that prevents damage to the root system. Containers may require vertical cuts down the full depth of the container to accommodate removal. All circling roots shall be loosened to ensure natural directional growth after planting.

D. Excavate circular plant pits with scarified vertical sides, except for plants specifically indicated to be planted in beds. Provide planting pits at least twice the diameter of the root system or container. Depth of pit shall accommodate the entire root system. Scarify the bottom and sides of the pit to a depth of four inches. If groundwater is encountered upon excavation of planting holes, the Contractor shall promptly notify the Engineer.

E. Place specified planting soil for use around the balls and roots of the plants.

F. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set crown of plant material at the finish grade. No filling will be permitted around trunks or stems or above grafts on grafted trees. Backfill the planting pits with specified soil or amendment. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.

G. After balled and burlapped plants are set, water in soil mixture around bases of balls and fill all voids.

1. Remove at least the top 2/3 of the burlap. If burlap has been chemically treated (green color), remove from the planting pit.
2. Remove completely all plastic wrapping materials, twine, and wires, and wire baskets from root balls.

H. Space ground cover plants using triangular spacing in accordance with indicated dimensions. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants. Always plant ground covers to within eighteen inches (18") of the trunks of trees and shrubs within planting bed and to within twelve inches (12") of edge of bed.

I. Spread and arrange roots of bare-rooted plants in their natural position. Work in specified planting soil. Do not mat roots together. Cut all broken and frayed roots before backfilling with remaining specified planting soil.

J. Fertilizer Application Rates:

1. <u>TURFGRO, "GROPACS" Fertilizer Packets</u> - Place fertilizer packets in the planting pits at the rate of one packet per gallon sized plant container.

2. 'Rainy Pacific NW Blend' - Broadcast at a rate of 20lbs. per 1000 square feet. Apply once a month for the first four months of the growing season.

K. Other Amendments Application Rates:

1. Optional Supplemental Mycorrhizal Amendment 'EndoROOTS' - Broadcast at a rate of lbs. per 1000 square feet.

L. Mulching:

1. Mulch tree and shrub planting pits and shrub beds with required mulching material at least 2" deep (settled) immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.
2. Mulch ground cover beds with at least 2" deep (settled) immediately after planting is completed.

M. Staking: Stake all deciduous and coniferous trees immediately after planting per SPR Standard Details.

N. Pruning: Prune all trees only to remove broken or damaged branches, or for aesthetic purposes as directed by the Engineer. Branches shall be pruned at the branch collar. Neither stubs nor flush cuts will be acceptable.

3.04 Root Barrier Installation: Install root barrier panel per manufacturer's recommendations and specifications in locations as shown on the contract drawings and as shown on SPR's standard details for tree planting. Install panels immediately adjacent to paving with ribs facing towards the tree roots. Trenches shall be deep enough so that sod or mulch completely covers the top of the barrier panels without causing the surrounding grades to be uneven.

3.05 Maintenance and Establishment:

A. Maintain plantings for a period of at least ***30 days*** after substantial completion of planting operations or until all plants are sufficiently recovered from transplanting and in a healthy growing condition acceptable to the Engineer.

B. Maintenance shall include regular (***at least twice weekly)*** cultivating, weeding, watering, pruning (only as directed), and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.

1. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
2. Straighten, repair and adjust guy wires and stakes as required.
3. Correct defective work, as soon as possible, after deficiencies become apparent and weather and season permit.

4. Water trees, plants, and ground cover beds within the first 24 hours of initial planting, and not less than twice per week (including rain) until Physical Completion.

3.06 Substantial/Physical Completion:

A. Inspection to determine Substantial Completion of planted areas will be made by the Engineer, upon the Contractor's request. Provide notification at least 5 working days before requested inspection date.

1. Planted areas will be accepted provided all requirements, including the maintenance period have been complied with and plant materials are alive and in a healthy, vigorous condition.

B. Upon Physical Completion, the Owner shall assume all plant maintenance.

3.07 Clean Up: Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

3.08 Warranty and Replacement:

A. Warranty plant material to remain alive and be in healthy, vigorous condition for a period of 1 year after the date of Substantial Completion. Inspection of plants will be made by the Engineer at the completion of planting.

B. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Engineer, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at the Contractor's expense. Warrant all replacement plants for 1 year after Physical Completion, unless otherwise specified.

C. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, floods, freezing rains, lightning storms, or winds over 75 MPH, winter kill caused by extreme cold and severe winter conditions not typical of planting area; acts of vandalism or negligence on the part of the Owner.

D. Remove and immediately replace all plants, as determined by the Engineer, to be unsatisfactory during the initial planting installation.

E. This warranty also applies to existing trees, shrubs and ground covers that are to be removed and heeled-in for later replanting on-site.

END OF SECTION