

SECTION 329300 – PLANTING

PART 1 – GENERAL

1.1 SUMMARY

- A. This section defines standards for plant selection, handling, installation and care from the project's start through substantial completion, guarantee period and final acceptance at end of the guarantee period.
- B. Section Includes:
 - 1. Furnish all labor, materials, equipment, and supplies and perform all operations required to complete landscaping work as shown on the drawings and hereinafter specified.
 - 2. Excavation of tree pits and planting beds to the required depth. Backfill & disposal of all excavated materials as required.
 - 3. Furnishing and planting of all plants, including woody and herbaceous plants.
 - 4. Installing, watering, staking, guying, and pruning (if directed) all plants until acceptance by Owner.
 - 5. Furnishing and placing of leaf mulch and erosion control matting in planting beds and areas indicated on L500.
 - 6. Maintaining all installed plantings, including watering, until acceptance of the completed work under this Section.
 - 7. Installing protection fencing around trees only
 - 8. Guaranteeing and replacing of sickly, dying and dead plants through a period of two (2) years following acceptance of the completed work under this Section.
 - 9. Protecting all existing site features from damage during the work of this Section.
 - 10. Maintaining a clean work site throughout duration of planting operations. Clean up of site and removal of any debris at completion of work of this Section.
- C. Related Sections:
 - 1. Division 32 - Topsoiling
 - 2. Division 32 - Amended Planting Soil
 - 3. Division 32 - Seeding

1.2 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree or shrub required; wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.
- C. Bare-Root Stock: Exterior plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for kind and size of exterior plant required.
- D. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.
- E. Finish Grade: Elevation of finished surface of planting soil.
- F. Planting Soil: See Section 329115 – Amended Planting Soil

- G. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- H. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- I. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
 - 2. Plant Photographs: Submit color photographs in digital format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.
- B. Samples for Verification: For each of the following:
 - 1. Trees and Shrubs: Three Samples of each variety and size delivered to site for review. Maintain approved Samples on-site as a standard for comparison. Where not feasible, Landscape Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality.
 - 2. Mulch: 1-quart volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
 - 3. Staking and components.

1.4 INFORMATIONAL SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Materials Lists: Within 45 days after award of the Contract, submit a complete list of all materials proposed to be furnished and installed (including sources) under this Section, demonstrating conformance with the requirements specified.
- C. Product certificates signed by manufacturers certifying that their products comply with specified requirements.
 - 1. Manufacturer's certified analysis for standard products.
 - 2. Analysis for other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
 - 3. Label data substantiating that plants, trees, and planting materials including mulch comply with specified requirements.
- D. Qualification data for firms and persons to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Owner's representatives and owners, and other information specified.
- E. Submit project schedule for approval by Owner's representative at least five days prior to planned start of work. Schedule must include milestone dates that are coordinated with

other site trades and locations of work.

1.5 QUALITY ASSURANCE

- A. Codes and Standards: Perform all work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. 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.
- C. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during all times. Provide at least one English speaking person present at all times during execution of this portion of the work, who is thoroughly familiar with the type of plants being installed and the proper materials and methods for their installation, to direct all work performed under this Section. This person shall have a minimum of 5 years experience in handling the specified plants, and should have a set of prints of the project on site.
- D. Provide quality, size, genus, species, and variety of plants indicated on the Plans, in accordance with the applicable requirements of ANSI Z60.1 American Standard for Nursery Stock, revised 2014. The highest horticultural standards shall be practiced from the time of plant purchase through delivery and installation on site to ensure health, vigor and establishment of all plants.
- E. Measurements: Measure trees according to ANSI Z60.1, revised 2014. Do not prune to obtain required sizes.
 - 1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Take caliper measurements 6 inches (150 mm) above ground for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above ground for larger sizes. Measure main body of tree for height and spread; do not measure branches or roots tip-to-tip.
 - 2. Other Plants: Measure with stems and foliage in their normal position.
- F. All plants are subject to approval by Owners Representative (OR) who may inspect plants either at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size, and quality. Owners Representative retains the right to further inspect plants for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work and during contract period. Contractor shall remove rejected plants from project immediately and replace with approved replacement, at appropriate planting time, at no cost to Owner..
 - 1. Notify Landscape Architect of sources of planting materials seven days in advance of delivery to site. For woody plants and trees: Label at least one (1) plant of each variety and size with a securely attached, waterproof tag bearing legible designation of botanical and common name..
- G. All plants are to be provided as specified. Requests to use plant substitutes, whether for size or species/cultivar, shall be submitted in writing to the Owner's representative for client review and approval, prior to delivery to the job site.
- H. Nomenclature and interpretation of plant names shall reference the following. Where the names of plant descriptions disagree, the most current information will prevail:
 - 1. The Royal Horticultural Society Horticultural Database (<http://www.rhs.org.uk/>).
 - 2. USDA – The Germplasm Resources Information Network :

3. <http://www.ars-grin.gov/>
 4. Manual of Woody Landscape Plants; Michael Dirr; Stipes Publishing, Champaign, Illinois; Most Current Edition.
- I. Plants of a larger size may be used if acceptable to Owner's Representative with a proportionate increase in size of roots or balls, and at no additions to the Contract Price
 - J. All plants shall comply with State and Federal laws, including quarantines with respect to inspection, plant diseases and insect infestation
 - K. Collected plants may be used only when approved by the Owner's Representative.
 - L. Equipment:
 1. Provide machinery and equipment necessary for the prompt, professional completion of the work. Such machinery and equipment shall be adequate to the task required and shall be operated by a person skilled and experienced in both operation of the equipment and the implementation of the task.
 2. Upon request, promptly furnish satisfactory evidence of the organization and equipment to be made available for the performance of the work.
 3. Comply with all Federal and State Department of Agriculture regulations for pest control which, in general, require that contractors operating in infested areas thoroughly clean all equipment units before moving them to non-infested areas. Full information can be obtained from Federal and State Pest Control Personnel.
 - M. Documentation and Coordination:
 - 1 Submit, upon request, documentation prior to the start of work under this Section that all plants and related materials have been ordered.
 - 2 Plant delivery to site and timing of installation is to be coordinated with Owner's Representative prior to delivery of plants to site.
 - 3 Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns. If lawns are already established, protect with $\frac{3}{4}$ " plywood, to be removed in manner that ensures viability of existing lawn.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.
- B. Trees: Deliver freshly dug trees. Do not prune before delivery, except as approved by Owner's Representative. Protect bark, branches, and root systems from sun scald, desiccation and drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees in such a manner as to destroy natural shape. Provide protective covering during delivery to prevent wind burn.
- C. Handle balled and burlapped stock by the root ball only; do not stand on or tamp directly on root balls.
- D. Container Plants: Deliver all plants to site in containers that ensure the protection of entire plant including roots and other plant parts against climatic and other injuries. Plants shall be grown or established in containers in which they will be delivered for at least 8 months but not for more than 24 months in advance of final planting. Plants shall be fully rooted into container but not root-bound. Plants with cracked or broken balls of earth when taken from the containers shall not be planted unless acceptable to the Owner's Representative. Do not lift or handle container plants by tops, stems, or trunks at any time.
- E. Deliver trees and plants after preparations for planting have been completed and install immediately. If planting is delayed more than 6 hours after delivery, set planting materials in shade, protect from weather and mechanical damage, and keep roots moist. Properly

protect plants with soil, moist mulch, etc.,

1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material, if not installed within six hours from delivery.
2. Root balls/plants shall not be permitted to remain un-installed or exposed during periods of freezing weather or extreme weather conditions.
3. Do not remove container-grown stock from containers before time of planting.
4. Water root systems of trees stored on site as often and thoroughly as necessary to maintain root systems in a moist condition.

1.7 PROJECT CONDITIONS

- A. Utilities: Determine location of above grade and underground utilities and perform work in a manner that will avoid damage. Hand excavate, as required. Maintain grade stakes until removal is mutually agreed upon by parties concerned. The Contractor shall be responsible for the location and protection of all utilities and for repair of any utilities damaged by Contractor's work. Any damage shall be replaced/repared to Owner's satisfaction at the Contractor's expense.
- B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Owner's representative before planting.
- C. Work notification: Notify Owner's Representative at least five (5) working days prior to the start of work of this Section.

1.8 COORDINATION AND SCHEDULING

- A. Planting times shall be during one of the following periods. Coordinate planting periods with maintenance periods, as applicable, to provide required maintenance through date of final acceptance.
 1. Spring Planting: April 26 – June 15 (frost-hardy and acclimatized plant material may be planted prior to April 26 and when not restricted by inclement weather limitations).
 2. Fall Planting: September 1 – October 15 (plant material may be planted after October 15 and when not restricted by inclement weather limitations).
 3. Summer Planting: to be performed on a project by project basis when not restricted by extreme heat and drought conditions, and when a water source and watering equipment are provided and are easily accessible.
 4. Dig trees according to the best recommended time, as per fall and/or spring dig hazards. Coordinate planting periods with maintenance periods to provide required maintenance thru date of Substantial Completion.
- B. Proceed with planting only when existing and forecasted weather conditions permit. If projected or current weather will stress plants, reschedule planting/installation times and dates

1.9 PLANT MATERIAL QUANTITIES

- A. In the event that quantity discrepancies or material omissions occur between the Plant List and Planting Plan, Contractor is to immediately notify Owner's Representative for clarification and to receive instruction about how to proceed.

1.10 MAINTENANCE

- A. Maintain for the following maintenance period by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports,

and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Revise duration of maintenance period below to suit Project. Revise starting date of maintenance period to date of planting completion if preferred.

- B. Maintenance Period: Until date of Final Acceptance, as confirmed in writing by the Owner.

1.11 SOIL ANALYSIS

- A. Soil Analysis: Upon request, obtain analysis of soil from an accredited soil laboratory at the cost of the Landscape Contractor or Project to determine pH and necessary amendments and fertilizers.

1.12 SUBSTANTIAL COMPLETION AND START OF GUARANTEE PERIOD

- A. Upon written notice from the Contractor, the Owner's Representative shall review the work and make a determination if the work is substantially complete.
- B. The date of Substantial Completion of the planting shall be the date when the Owner's Representative accepts that all work in Planting is complete.
- C. All plants must be in a vigorous growing condition at the time of Substantial Completion.
- D. The Plant Guarantee period begins at the date of written notification of Substantial Completion from the Owner's Representative. The date of Substantial Completion for planting may be different than the date of substantial completion for the other sections of the project.

1.14 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Warrant the following living planting materials for a period of two (2) years after the date of Acceptance of Installation, against defects including death and unsatisfactory growth, except for defects resulting from neglect or abuse by Owner, abnormal weather conditions unusual for warranty period, or incidents that are beyond Contractor's control.
 - 1. Trees and Shrubs
 - 2. Herbaceous and groundcover plants
- C. Replace at the direction of the Owner's Representative and in accordance with the Drawings and Specifications, all plants that are dead (all material that is at least 25% dead, and any tree with a main leader that has died back), plants that are in unhealthy or unsightly condition, plants that have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence.
- D. All replacements shall be plants of the same kind, size, and quality as originally specified.
 - E. Warranty shall not include damage or loss of plants caused by fires, floods, freezing rains, lightning, winds over 75 miles per hour, winter kill caused by severe winter conditions not typical of the planting area, by acts of vandalism, or by negligence on the part of the Owner.
- F. Replaced plants shall be furnished, planted, mulched, and watered as part of the warranty.

PART 2 – PRODUCTS

2.1 GENERAL

- A. All plants shall be the kind and size indicated on the plant list and shall be true to name. All plants shall be sound, healthy, vigorous, nursery stock with a normal habit of growth, shall be subjected to nursery root and top spraying, transplanting, etc., and shall have been inspected and approved for sale, transporting and transplanting by all governmental agencies authorized to administer such control. Plants shall be subject to inspection and approval by the Owner's Representative at place of growth and upon delivery to project site for conformity to specifications. Such approval shall not impair the right of inspection and rejection during process of the work. All trees will be tagged in the nursery by the Owner's Representative.
- B. All plants shall be subject to inspection and approval by the Owner's Representative throughout Contract period. All plants are subject to approval by Owner's Representative. The Contractor must submit to the Owner's Representative a letter of certification from the supplying nurseries that plants supplied to the contractor conform to the requirements listed below:
 - 1. Provide trees of sizes and grades conforming to ANSI Z60.1 for type of trees required. Trees of a larger size may be used if acceptable to Owner's representative with a proportionate increase in size of roots or balls, and at no additions to the Contract Price.
- C. Prior to delivery to the site, the Contractor shall arrange with the Owner's Representative a minimum of two nursery visits for the purpose of selecting and tagging plants proposed for the project. This will include all trees as specified. The Owner's Representative shall inspect proposed plants before plants will be permitted on site.
- D. Label at least one (1) tree of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.
- E. Trees with multiple leaders, unless specified, will be rejected

2.2 SHADE AND FLOWERING TREES

- A. Shade trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, free of branches to about 50% of their height, of height and caliper indicated, conforming to ANSI A300 Section 6 for type of trees required.
- B. Provide balled and burlapped trees except where indicated.
 - 1. Container-grown trees will be accepted in lieu of balled and burlapped trees subject to meeting ANSI A300 Section 6 limitations for container stock.

2.3 DECIDUOUS SHRUBS

- A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according ANSI A300 Section 6 for type, shape, and height of shrub.

2.4 CONIFEROUS EVERGREENS

- A. Form and Size: Normal-quality, well-balanced, coniferous evergreens, of type, height, spread, and shape required, complying with ANSI A300 Section 6.
- B. Form and Size: Specimen-quality, exceptionally heavy, tightly knit, symmetrically shaped coniferous evergreens:

1. Provide balled and burlapped trees.

2.5 BROADLEAF EVERGREENS

- A. Form and Size: Normal-quality, well-balanced, broadleaf evergreens, of type, height, spread, and shape required, complying with ANSI A300 Section 6.

1. Provide balled and burlapped or container plants as per plant schedule.

2.6 GROUNDCOVER PLANTS

- A. Groundcover: Provide groundcover of species indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1.

2.7 HERBACEOUS PLANTS

- A. Annuals: Provide healthy, disease-free plants of species and variety shown or listed. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.
- B. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.
- C. Vines: Provide vines of species indicated complying with requirements in ANSI Z60.1 as follows:
 - 1 Two-year or older plants with heavy, well-branched tops, with not less than 3 runners 18 inches or more in length, and with a vigorous well-developed root system.
 - 2 Provide field-grown vines. Vines grown in pots or other containers of adequate size and acclimated to outside conditions will also be acceptable.

2.8 REQUIREMENTS FOR BALLED AND BURLAPPED STOCK

- A. Where indicated to be balled and burlapped, provide trees dug with firm, natural ball of earth in which they are grown free of noxious weed matter.
- B. Provide ball size of not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree required. Increase ball size or modify ratio of depth to diameter as required to encompass fibrous and feeding root system necessary for full recovery of trees subject to unusual or non-typical conditions of growth, soil conditions or horticultural practice.
- C. No balled and burlapped plant will be accepted if the ball is cracked or broken either before or during the process of planting. Root balls shall be firmly wrapped with burlap and bound with natural twine or wire mesh
- D. Wrap and tie earth ball as recommended by ANSI Z60.1 for size of balls required. Drum-lace balls with a diameter of 30" or greater.

2.9 CONTAINER STOCK

- A. Container stock shall be grown in its delivery container for not less than six (6) months but not more than 2 years.
- B. Plants shall have well established root systems but not be root-bound.
- C. Plants with cracked or broken balls of earth when taken from the containers shall not be planted.

2.10 BARE-ROOT STOCK

- A. Bare-root stock should have a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for kind and size typical of its species.
- B. Plants should be sufficiently packaged and stored to preserve moisture in fibrous root systems to ensure the health and vigor of the plant.

2.11 MULCHES

- A. Mulch is to be 100% natural leaf materials.
- B. Substitutions may be used only with prior approval from Owner's Representative.

2.12 LANDSCAPE HAND EDGING

- A. Planting beds and tree rings are to be vertically edged with a hand spade or mechanical edger to a minimum depth of 4". The elevation of the planting bed starts at the low point of the cut edge and angles back towards the planting at a 45 degree angle until it reaches the finish grade of the planting bed. Work excess soil back into planting bed.

2.13 TOPSOIL

- A. See Section 32 91 19 - Topsoiling

2.14 ANTI-TRANSPIRANT:

- A. Shall be "Wilt-Pruf" by Nursery Specialty Products, Inc., 207 East 47th Street, New York, NY 10017, or approved equal, applied as specified by the manufacturer to species as indicated in drawings.

2.15 PLANTING SOIL

- A. See Section 32 91 15 – Amended Planting Soil

2.16 EROSION-CONTROL MATERIALS

- A. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended wood staples, 6 inches long. NO STEEL WIRE STAPLES.

2.17 WATERING EQUIPMENT

- A. Watering Equipment – to be provided on a project-by-project basis, and to remain the property of the Owner at the completion of the project:
 - 1. Gator Bags
 - 2. Ooze Tubes sufficient for watering multi-stem trees or shrubs.
 - 3. Soaker Hose -should be black or dark color which could blend with mulch, and that can be used above or below soil/mulch surface, will not burst if frozen and provides even distribution of water throughout the planting bed. Installed as per manufacturer's specifications and as directed by project.

2.18 STAKES AND GUYS FOR TREES

- A. Stakes, anchors, and wires shall be of sufficient strength to maintain the tree in an upright position in the conditions in which the tree will be installed.
- B. Guy wires shall be galvanized, multi-strand, twisted wire.
- C. At the location where guy wires are attached around the tree, the trunk shall be protected with 20-mm (3/4 in.) diameter rubber hose, black or dark green in color, and of sufficient length to extend past the trunk by more than 105 mm (6 in).

2.19 PROPOSED TREE PROTECTION FENCING

- A. Mesh fencing and T-Posts Sizes as shown on drawings,

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. Verify that planters have been waterproofed and inspected.
- C. Verify the required drainage and irrigation rough-in has been installed and is fully operational.
- D. Verify that subgrades are accurately established before spreading planting soil.
- E. Once bed preparation has been approved, the Landscape Contractor assumes responsibility for subgrades and finish grades in the areas affected.

3.2 PLANT PRUNING

- A. Prune, thin, and shape trees according to standard horticultural practice and as directed by owner's representative. Prune trees to retain required height and spread. Unless otherwise directed by Owner's Representative, do not cut tree leaders; remove only crossing, injured or dead branches.

3.3 PLANTING BED PREPARATION

- A. Loosen subgrade of planting beds, as needed, to promote adequate drainage and soil conditions promoting plant health and root establishment, but which prevents settlement below finished grade of topsoil layers or plantings. Remove all trash from subgrade along with stones and extraneous debris larger than 1" or that will prevent proper installation and establishment of plantings.
- B. All stumps, weeds, vegetation not being retained are to be grubbed out and/or removed.
- C. Install planting soil mix in 6" lifts, gently compacted using hand tamping, to a depth that meets finished grades after natural settlement but which ensures root and plant establishment. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet. Do not over compact planting soil; compaction is subject to review and alteration.
- 1. Thoroughly blend any soil amendments or fertilizer needed, as per soil test results, into planting soil either before installation of soil lifts, or as lifts are being installed and before tamping. Delay mixing fertilizer with planting soil if planting will not occur within a few days.

- D. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture, ensuring soil surface is free from debris. Rake, remove ridges, and fill depressions to meet finished grades.
- E. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.
- F. Minimize soil disturbance in areas under existing tree canopy or on sloped areas.
- G. Planting beds and tree rings are to be vertically edged with a hand spade or mechanical edger to a minimum depth of 4". The elevation of the planting bed starts at the low point of the cut edge and angles back towards the planting at a 45 degree angle until it reaches the finish grade of the planting bed. Work excess soil back into planting bed.

3.4 PLANTING PIT PREPARATION FOR TREES

- A. Verify that subgrades are accurately established before digging tree pit.
- B. Dig a hole so that depth will enable tree to be installed in a manner that allows the root flare to be at or slightly above Finished Grade after normal compaction, and at the same relationship to finished grade as they were to the ground from which they were dug.
- C. Planting hole should be 2 – 3x wider than the size of the root ball.

3.5 DELIVERY, STORAGE AND HANDLING

- A. Plants must be sufficiently containerized, packaged, tarped, etc. to ensure viability of plants and the protection of roots and other plant parts against sun scald, drying, sweating, whipping, and other handling damage as well as climatic seasonal and other injuries.
- B. Trees: Deliver freshly dug trees. Do not prune before delivery, except as approved by Owner's Representative. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees in such a manner as to destroy natural shape. Provide protective covering during delivery to prevent wind burn. Do not drop trees during delivery.
- C. Water all trees and plants as needed from time of pick up through substantial completion.
- D. Do not lift or handle container plants by tops, stems or trunks at any time.
- E. Handle balled and burlapped stock by the root ball only; do not stand on or tamp directly on root balls.
- F. Deliver trees and plants after preparations for planting have been completed and install immediately. If planting is delayed more than 6 hours after delivery, set planting materials in shade, protect from weather and mechanical damage, and keep roots moist. Properly protect plants with soil, moist mulch, etc., in a manner acceptable to Owner's Representative.
 - 1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material, if not installed within six hours from delivery.
 - 2. Root balls/plants shall not be permitted to remain un-installed or exposed during periods of freezing weather or extreme weather conditions.
 - 3. Do not remove container-grown stock from containers before time of planting.
 - 4. Water root systems of trees stored on site as often and thoroughly as necessary to maintain root systems in a moist condition.

3.6 LAYOUT

- A. Layout specifications and area and perimeter measurements are provided as guidelines only, and are to be confirmed in the field by Contractor(s) and adjusted as necessary and collaboratively with Owner's Representative.
- B. The location of new plants and new planting beds are to be staked out in collaboration with and approved by the Owner's Representative prior to installation.

3.7 PLANT INSTALLATION

- A. All root balls removed from containers will be scarified and roots thoroughly separated prior to planting.
- B. All plastic or no-rot burlap or twine are to be completely removed from the plant ball prior to backfilling with planting soil. Biodegradable burlap and twine and wire cage material shall be cut away from the top 1/3 of the root ball and remove from the site.
- C. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, stop work and notify Owner's Representative for additional direction.
- D. Set plant plumb and in center of planting pit or trench with top of ball raised just above adjacent finish grade enough to allow for normal compaction and sufficient final planting depth, and so surface of root system will be flush with adjacent finished grades after normal settling.
- E. Maintain full depth of planting soil around root system of plants.
- F. Place soil around ball in layers, tamping gently to settle backfill and eliminate voids and air pockets -do not over tamp. When pit is approximately half backfilled, water thoroughly before placing remainder of backfill

3.8 MULCH INSTALLATION

- A. Install erosion control matting prior to mulching. Install leaf mulch on top of matting to a depth of 2", see planting details.
- B. Mulch is to be raked smooth, eliminating pockets and low points.
- C. Mulch is not to be applied so that it touches the bark of woody plants or tree trunks.
- D. For tree rings: At the time of planting, provide 3 inches high continuous soil saucer around perimeter of planting hole. Prior to end of guarantee period, but not sooner than 8 months after planting, contractor is required to shave off the saucer around the mulch ring area and top dress with new mulch. Cover root ball with no more than 1" (depth) of mulch, installed so that mulch does not touch the bark/trunk.

3.9 STAKING AND GUYING – TREES:

- A. Guy and stake trees more than 2.5 -3-inch (75-mm) caliper unless otherwise indicated, or in situations such as sandy or poor soils, in windy locations, or on slopes. Trees that settle out of plumb due to inadequate soil compaction either under or adjacent to the root ball shall be excavated and reset. Trees that have settled out of plumb shall never be pulled straight using guy wires.

3.10 PROTECTION, CLEAN-UP AND MAINTENANCE

- A. During landscape installation, keep pavements clean and work area in an orderly condition. Place 3/4" plywood as needed to protect existing turf, paved areas, etc.
- B. Install plastic safety fencing as needed to provide barrier protection for newly planted areas or areas to be preserved.
- C. Protect new plantings and plants to remain from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damage to new or existing plantings at the expense of the Landscape Contractor.
- D. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of it off the Owner's property.
- E. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees free of insects and disease. Maintain throughout project work period until Substantial Completion. All plantings which appear to be in distress or defective shall be removed immediately and replaced or replanted according to planting times and quality as defined in this section, with specimens of the same species and size as originally specified:
- F. Watering:
 - 1. The contractor shall be fully responsible to ensure that adequate water is provided to all plants throughout the work period until the date of Substantial Completion.
 - 2. Hand water root balls of all plants to ensure that the root balls have moisture above wilt point and below field capacity, and appropriate for the species. As needed, moisture content in each root ball and soil outside the root ball can be tested to determine water content.
- G. Guy Wires and Stakes are to be maintained by Contractor until the end of the Guarantee Period (see section 3.10) to avoid girdling throughout the first growing season, and removed after the first growing season if site conditions and adequate plant establishment permit.
- H. Tree protection fencing is to be maintained by Contractor until the end of the Guarantee Period (see section 3.10) to avoid any damage of the trees.

3.11 ACCEPTANCE AND GUARANTEE

- A. Plants are to be guaranteed as per the following list, starting from the time of Substantial Completion. Defective materials shall be removed immediately and replaced according to planting times and quality as defined in this section, with specimens of the same species and size as originally specified, with new guarantee for the replacement plant starting at time of replacement. Written Final Acceptance shall be provided at the end of the guarantee period by Owner Representative once all conditions of this Section have been met. All plants must be in a vigorous growing condition at the end of the guarantee period:
 - 1. Minimum of 2-year guarantee on all newly installed plant material.
- B. When Maintenance after Substantial Completion is by others, and not awarded to the Contractor:
 - 1. After Substantial Completion Acceptance, the Contractor shall make sufficient site visits to observe the Owner's maintenance and notify the Owner's Representative in writing if maintenance, including watering, is not sufficient to maintain plants in a healthy condition. Such notifications must be made in a timely period so that the Owner can take corrective action and/or schedule a time to review with the Contractor prior to taking corrective action. Notification must define the maintenance needs observed, include a date and request for

site review.

2. In the event that the Contractor fails to visit the site and/ or notify the Owner's Representative in writing, with confirmation that Owner's Representative received the notification, lack of maintenance shall not be used as grounds for voiding or modifying the provisions of the warranty.
- C. Contractor is to be responsible for contacting Owner's Representative defined at the start of this section (1) one month prior to end of guarantee period to review health and successful establishment of plantings. Guarantee remains in effect until this final review takes place.

END OF SECTION 329300