

SECTION 02953

TREES AND SHRUBS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnishing landscape planting. Rough and finish grading is part of the landscape work.

1.02 UNIT PRICES

- A. No separate payment will be made for trees and shrubs. Include payment in lump sum payment for Landscape Planting or under each unit price if included in Bid Proposal.

1.03 SUBMITTALS

- A. Submit certification from supplier that each type of tree and shrub conforms to reference standards.
- B. Soils and compost materials must be approved at their source prior to delivery.

1.04 DELIVERY AND STORAGE OF MATERIALS

- A. Pack plant material to provide protection against damage from wind, weather or other possible sources. Tie plants to prevent whipping when shipment is made by truck.
- B. Provide a storage platform for balled-and-burlapped root balls over 24 inches in diameter.
- C. Store plants on the site as directed.
- D. Spray with antitranspirant at time of delivery in warm season months. Apply at rates in accordance with manufacturer's recommendations.

1.05 SUBSTITUTIONS

- A. Substitution of larger size or better grade than specified will be allowed, but with no increase in unit cost.
- B. Substitution of an alternate species may be accepted upon written approval from the Owner's Representative.

1.06 WARRANTY

- A. Provide 1-year warranty on plants. The warranty period commences after final completion.
- B. Replace plants that fail during the warranty period according to the specifications governing the original plants.
- C. Periodically inspect plants for proper watering and spraying, during warranty period.
- D. Damage caused by natural hazards such as hail, high winds or storm is not covered by the guarantee, excluding drought.
- E. Plant materials which die due to insects or diseases are included in the warranty.
- F. Plant materials which die due to lack of water are included in the warranty.
- G. Existing plant material required to be moved on the site will be protected under the warranty.

1.07 SOIL ANALYSIS

- A. Submit for approval an analysis of soils obtained from off-site sources prior to delivery.
- B. Analysis of existing soil is not required.

1.08 PLANT CERTIFICATES

- A. Submit inspection certificates as required by law with the invoice for each shipment or order of stock. Submit certificates to the Owner's Representative in ample time to be reviewed to meet installation schedule.

1.09 PROTECTION

- A. Take reasonable precautions to prevent damage to existing structures and plants. Keep the area free of hazardous obstructions.
- B. Protect trees which may be subject to damage.
- C. During planting, protect installed plants and lawns from damage. If heavy equipment or materials must be moved across lawns, use planks or pontoons to protect the turf. Similarly, protect walks across which heavy equipment must pass.

PART 2 PRODUCTS

2.01 TOPSOIL

- A. Provide a friable soil which is rich in organic matter. Obtain from naturally well-drained areas of uniform loam which is free from subsoil, brush, objectionable weeds and other litter, or contamination and free from clay lumps, stones, stumps, roots, or other objects larger than 1 inch in diameter. The topsoil must also be free from toxic substances and any other material or substances which might be harmful to plant growth or be a hindrance to grading, planting, and maintenance operations.
- B. Topsoil obtained from excavation or borrow operations shall have the following characteristics:
 - 1. pH value: between 5.5 and 6.5.
 - 2. Liquid limit: 50 or less.
 - 3. Plasticity index: 10 or less.
 - 4. Gradation: maximum of 40 percent passing the #280 sieve.
- C. Obtain topsoil from naturally well-drained areas where topsoil occurs at a minimum depth of 4 inches and has similar characteristics to that found at the placement site. Do not obtain topsoil from areas infected with a growth of, or reproductive parts of nut grass or other noxious weeds.
- D. Submit written certification that topsoil meets the above criteria before delivery of soil to the site. Certification shall be signed by the Contractor and Seller of the topsoil.
- E. Topsoil available on the site may be used in any designated areas to be landscaped if previously inspected and approved in writing.

2.02 FERTILIZER

- A. Provide an inorganic commercial fertilizer which is uniform in composition, dry and free flowing, in original unopened containers, each bearing the manufacturer's guaranteed analysis. Caked, damaged or otherwise unsuitable fertilizer will not be accepted.
 - 1. For lawns: 12-24-12.
 - 2. For ground cover areas, shrub beds and tree holes: 20-10-5.

2.03 CONSTRUCTION MATERIALS

- A. Tree Guys:
 - 1. Guy Wires. Use 10-gauge galvanized annealed iron wire.
 - 2. Hose will be 2-ply, fiber-reinforced dull green rubber at least 3/4 inch diameter.
 - 3. Turnbuckles will be galvanized, with a 3-inch minimum lengthwise opening and fitted with screw eyes.
- B. Stakes:
 - 1. For use in identifying tree and shrub locations.
 - a. Use 1" x 2" pine, or equivalent, 18 inches long.
 - b. Use waterproof marker for identification.
 - 2. Where applicable for anchoring trees, use wood deadmen of at least 2" x 4" stock, 36 inches long and buried 3 feet.
 - 3. For supporting guyed trees, use stakes that are of at least 2" x 4" stock, 36 inches long. Notch stakes for guy wires 2 inches from the top.
 - 4. Use tree stakes that are of sound and durable quality capable of withstanding aboveground and underground conditions either T-post or treated lodge poles.
- C. Tree Seal: Pruning cuts, bruises, or scars over 3/4 inch in diameter on trees will be treated with a commercial tree wound dressing.

2.04 SPRAYS

- A. Sterilization:
 - 1. Use approved solution of "Dyclomec 4G" or equal for areas to be planted.
 - 2. Use 'Pramitol' or equal for areas to be paved.
- B. Herbicides:
 - 1. Use an approved systemic non-selective, post emergent herbicide on specified areas to kill all vegetation.
 - 2. Use "Confront" or equal for general control of broadleaf weeds in lawns.
 - 3. Use "Preemerg, Eptam, Dryclomec" or equal for ground cover.

4. Use an approved pre-emergent to control seed germination in specified areas.
- C. Root Stimulant: Use approved root stimulant on newly planted trees, shrubs, vines and ground cover areas.

2.05 PLANT CHARACTERISTICS

- A. Provide plants which are true to type and name, and typical of their species or variety. Plants must have a normal, well-developed branch structure, with a vigorous root system, and must be generally sound and healthy. Use plants which are free from defects, including:
1. Disfiguring knots.
 2. Sun scald.
 3. Injuries.
 4. Bark abrasions.
 5. Plant diseases.
 6. Insect eggs.
 7. Borers.
 8. Infestations.
- B. Select well-formed plants balanced between height and spread typical of the species or variety with branches in normal position. Heading back plants to meet size limits will not be permitted.
- C. Unless otherwise specified, all plants will be nursery grown and at least twice transplanted. Use plants which have been growing under similar climatic conditions to those of the project for at least 2 years prior to the date of the contract. Recently stepped-up plants will not be acceptable. All balled-and-burlapped plants or bare root plants must be freshly dug; heeled-in or cold storage plants will not be accepted.
- D. Balled, bare root and container-grown plants will conform to the definitions given in the American Standards for Nursery Stock.
- E. No tree will be accepted which has had leaders cut or damaged, or which has a thin, weak trunk or poorly formed tops.

- F. Regardless of sample selection, a plant may be rejected at the site by the Owner's Representative.

2.06 NURSERY STOCK

- A. Deciduous Trees: Provide trees which are straight and symmetrical and have a persistently preferred main leader. The crown must be in good overall proportion to the entire height of the tree. Where a clump is specified, a plant having a minimum of three stems originating from a common base at the ground line will be furnished. Measure trees by average caliper of trunk.
 - 1. For trees up to 4 inches in diameter, measure caliper 6 inches above ground.
 - 2. For trunks larger than 4 inches, measure caliper 12 inches above ground.
- B. Evergreen Trees: Form of the top will be typical of the species and not unnaturally sheared or color-treated. Measure by average caliper. Caliper will be taken 6 inches above the ground on trees up to 4 inches in diameter and 12 inches above the ground on trees larger than 4 inches.
- C. Vines and Ground Cover: Provide plants which are container-grown for sufficient time to ensure adequate root growth to hold the soil in place and retain the original shape when removed from the container.

PART 3 EXECUTION

3.01 WORK CONDITIONS

- A. Site Availability: Begin no landscape work where conflicting site work is incomplete or as otherwise directed by the Owner's Representative.
- B. Weather Restrictions: Stop work during inclement weather such as drought, high winds, excessive rain, extreme heat, cold or freezing temperatures as directed by the Owner's Representative. Obtain authorization before resuming work.
- C. Consult an arborist should work conditions vary from anticipated conditions at no additional cost to the City.

3.02 SITE PREPARATION

- A. Existing Trees:
 - 1. Protection: Protect tops, trunks and roots of trees to remain on the site. Before starting work, box, fence or otherwise protect trees subject to

- construction damage. Remove boxing when directed. Do not stockpile materials or heavy equipment within the branch spread of trees.
2. Removal: Remove trees marked for removal. Do not remove any tree without proper authorization. Stumps within 36 inches of final grade must be removed.
 3. Pruning and Surgery: Cut and trim trees only as directed; do not cut any tree without proper authorization. Trim existing trees of dead or diseased limbs. Cut limbs close to the trunk. Cover cuts over 3/4 inch in diameter with an approved tree wound dressing.
- B. Grading Around Trees: As required, fill or grade within the branch spread of trees to remain, observing the following requirements.
1. For trenching beneath trees, tunnel under the tree roots with careful hand digging. Where possible, avoid cutting or injuring roots.
 2. Do not raise or lower the grade around an existing tree in any way, unless so directed.
- C. Placing Topsoil:
1. Disk, drag, harrow or hand rake subgrade. Scarify the subgrade to a depth of 1-1/2 inches. Before placing topsoil, rake the subsoil surface clear of stones, wood, rubbish and other debris. Place no topsoil until the subgrade preparation has been approved.
 2. Spread, rake and compact topsoil to form a layer with a minimum depth of 4 inches in lawn areas and 6 inches in shrub areas. Place topsoil to conform to finished gradients as shown on the grading plan.
 3. Remove spilled topsoil from curbs, gutters, and, paved areas and dispose of excess topsoil in accordance with requirements of Section 01564 - Waste Material Disposal.
- D. Fertilizer: Evenly broadcast and work fertilizer into soil at rate recommended by the nursery.

3.03 PLANTING TREES, SHRUBS, AND GROUND COVER

- A. Layout: Before proceeding with planting operations, notify the Owner's Representative 3 working days in advance to coordinate a site visit. Set stakes to locate plants or place 5-gallon and larger sized plants in their permanent locations and

acquire approval from Landscape Architect or Owner's Representative. Do not place plants or stakes in planter areas until soil has been placed and approved.

- B. Excavation: Excavate tree pits and holes for placement of plants. Dig pits for trees and large shrubs in 15-gallon containers or larger at least 2 feet wider than the diameter of the tree root ball. For 1- and 5-gallon or equivalent stock, dig holes at least 6 inches wider than the root ball.
- C. Setting Trees and Shrubs:
1. Set plants plumb or straight and centered in the pit or hold. Place plants at such a level that, after settlement, a natural relationship of the crown of the plant with the ground surface will be established.
 2. Form a 6-inch-deep ring around the inside perimeter of the bottom of the tree pit to facilitate drainage away from the roots or ball of the plant. Place the plant upright on the remaining mound of undisturbed soil. Spread the roots of bare root plants to their natural position and cut off all broken or frayed roots. Place balled-and-burlapped plants with their balls still wrapped.
 3. When balled-and-burlapped plants are being set, loosen burlap, ropes and wire from the tops and the sides of the ball before backfilling with soil. Do not remove burlap from beneath the ball.
- D. Backfilling Around Trees and Shrubs:
1. Backfilling each plant hole with a planting soil mixture for planted areas as follows: 60 percent soil, 20 percent humus, and 20 percent sand.
 2. Initially place in layers around the roots or ball of the plant a mixture of backfill material excluding the sand. Carefully tamp each layer of topsoil to avoid injury to the roots or ball and to fill voids. Work mixture in among the roots of bare-root plants. When about two-thirds of the hole has been backfilled, fill the hole with water and allow the soil to settle around the roots. After the water has been absorbed, fill the hole with a complete soil mixture, including sand and tamp to grade. Bring any settlement to grade by adding topsoil.
 3. Construct a minimum 4-inch-high soil berm to form a watering basin around newly planted trees and shrubs. On all slopes except minor ones, form soil into an adequate dam or shoulder on the downhill side to catch and hold water and prevent erosion. Properly regrade the slope on the uphill side.
 4. Hedge plants may be planted in a continuous trench instead of pits. Evenly space plants true to line and regrade after settlement.

- E. Guying, Staking and Wrapping: Support trees immediately after planting by the use of guys or stakes.
1. Guy each tree with three guys equally spaced around the tree. Where possible, attach each guy to the tree trunk at major branch crotches of the tree at least 4 feet above ground height. Encase guy wires in cloth-reinforced rubber hose to prevent cutting into the bark. Place encased guy wire around the trunk in a single loop. Stretch the guy at a 60-degree angle to a notched stake driven completely into the ground or to a deadman with the tip buried at least 3 feet below finished grade. Use a deadman where underground utilities are within 4 feet of finished grade. Wire should be equally taut to prevent the tree from swaying in wind. Mark each wire 3 feet above the ground with a 12-inch streamer of plastic white surveyors tape.
 2. Use three stakes for trees with a trunk 3- to 4-inch caliper; two for trunks with less than 3-inch caliper. Space stakes equally about each tree and drive vertically into the ground 2-1/2 to 3 feet. Avoid injuring ball or roots. Attach strands of wire around the trunk at the meeting of the primary branches and to each stake. Encase the wire around the trunks with cloth-reinforced rubber hose to prevent cutting into the bark.

3.04 CLEANING AND MAINTENANCE

- A. Maintenance. Requirements for maintenance begin when the work commences and continue until substantial completion and written provisional acceptance. Plant maintenance includes necessary watering, cultivation, weeding, pruning, wound dressing, disease and insect pest control, protective spraying, and replacement of unacceptable materials. Maintenance also includes straightening plants which lean or sag, adjusting plants which settle or are planted at an improper height, and implementing any other procedure consistent with good horticulture practice and necessary to ensure normal, vigorous and healthy plant growth.
1. Watering. Water as needed. The quantity of water applied at one time must be sufficient to penetrate the soil to a minimum depth of 8 inches at a rate which will prevent saturation of the soil. Owner may request additional watering should plant/tree appears stressed or lacking water. Use water that is free of impurities or any substance which might injure the plants.
 2. Weeding. Keep planting areas free of weeds and undesirable grasses. Use approved methods and materials.
 3. Disease and Insect Pest Control. Inspect plant materials at least once a month to locate any disease or insect pest infestation. Identify or have identified the

nature or species of the infestation. Submit the proposed method of control for approval prior to application of control measures.

B. Cleaning.

1. During planting, remove excess and waste materials regularly. As work in an area is completed, thoroughly clean the area. Remove debris, rubbish, subsoil and waste materials from the site and dispose of in a legal manner. Trash burning on the site will not be allowed.
2. Any paved areas where products are placed must be cleaned periodically to prevent damage or the accumulation of debris.
3. Existing grass areas damaged by planting operations must be cleaned, and returned to the condition prior to start of planting work.
4. Upon completion of construction and before final acceptance, remove temporary facilities, tools, equipment, surplus materials, and debris. Clean all paved areas. Leave the premises neat and clean.

END OF SECTION