
PART 1 GENERAL**1.1 SUMMARY****A. This Section includes:**

1. In accordance with growing specifications listed herein, grow and maintain selected plant material in significant advance of permanent installation required by the Contract Drawings. The growing and maintenance tasks shall include but are not limited to watering, pest and disease management, fertilization, pruning, weeding, root ball boxing and repairing guy wires as required.
2. Delivery: Deliver plants upon request to Buyer's designated job site as defined below.

B. Conditions:

1. Purchase Order: Provide, grow and maintain all plant materials designated on approved Purchase Order, per Contract Documents.
2. Schedule: Comply with the delivery schedule as set forth in the Growing Contract, as the same may be reasonably reviewed no less than 30 days prior to contracted delivery date. See "Delivery" below.
3. Maintenance: Maintain all plants in a healthy, vigorous growing condition at all times. Unless specifically excepted, allow all plants to grow to their natural genetic form and size.

C. Responsibility:

1. Natural Disasters: Buyer agrees that Grower is not liable for delay or failure to deliver plant materials due to embargoes, war, vandalism, fire, flood, drought, or other Acts of God. Buyer shall make all reasonable efforts to protect against such contingencies and shall be fully insured against their financial impact as defined in the Growing Contract.
2. Delivery delayed by Owner: Should Buyer ask Grower to delay delivery of plant materials to the job site for more than 30 days beyond the scheduled delivery date given by the Growing Contract, Buyer agrees to pay a monthly maintenance charge, prorated on a weekly basis, as negotiated at the time of contract.
3. Post-Delivery Maintenance: Buyer agrees that Grower is not responsible for the maintenance or planting of contract grown materials after delivery to, and acceptance at, the job site.

1.2 REFERENCES

- A. University of California Cooperative Extension Publications: Fertilizing Woody Plants, Leaflet #2958, Sept. 1979
Pruning Landscape Trees, Leaflet #2574, Jan. 1979
- B. Plant Production in Containers by Carl E. Whitcomb, Lacebark Publications 1984.
- C. Arboriculture: Care of Trees, Shrubs and Vines in the Landscape by Richard W. Harris, Prentice- Hall, Inc. 1983.

1.3 DEFINITIONS

- A. Grower: Contracted Agency licensed in the State of California for the production of nursery stock, and as designated in the signed Growing Contract as "Grower".
- B. Buyer: Intended purchaser of plant materials as described herein upon successful completion of the Growing Contract.

1.4 SUBMITTALS**A. LEED Submittals:**

1. Within 30 days of Contract award, assemble and submit all LEED material information on the "LEED Material Tracking Spreadsheets" and forms provided in the Project Manual, together with all supplemental documentation as required by LEED.

- B. Environmental Submittals:
1. Credit MR 2.1 and 2.2: Waste management plan and reporting complying with Section 01 74 00, Construction and Demolition Debris Recovery Plan.
 2. Credit MR 5.1 and 5.2: Product data indicating location of extraction and processing and location of manufacture. Include a statement indicating projected costs for each product being extracted, processed, and manufactured within 500 air miles of the Project Site.
- C. Product Data:
1. Fertilizer.
 2. Pest and disease management materials, including certification for use.
- D. Schedule: Monthly growing and maintenance operations, including:
1. Fertilization, watering and pruning.
 2. Pest and disease management .
 3. Status report on all plant materials.
- E. Licenses, Permits and Insurance: As required by the State or Federal government pertaining to the Work.

1.5 QUALITY ASSURANCE

- A. Performance: It is the intention of these specifications to call for the highest level of quality in growing and maintenance of nursery stock plant material; methods and procedures shall be the most recently recommended, recognized and/or registered for the industry.
- B. Growing Grounds: Trees shall be grown at a site within the San Francisco Bay Area.
- C. Certificates:
1. Provide certificates of inspection required by law for transportation of each shipment of plants along with invoice.
 2. File copies of certificates with Owner's representative after acceptance of material. Inspection by Federal or State Governments at place of growth does not preclude rejection of plants at project site.
- D. Applicable Standards: Apply standards for plant materials as described in the following:
1. An Annotated Checklist of Woody Ornamental Plants of California, Oregon and Washington, [number 4091]", McClintock and Leiser, Division of Agricultural Sciences, University of California, 1979.
 2. "American Standard for Nursery Stock", 1986 Edition, American Association of Nurserymen, Inc.
 3. Hortus III - 1976 Edition, Bailey Hortatorium, Cornell University.
- E. Condition of Plants:
1. Plants shall be free of dead or dying branches and branch tips, with all foliage of a normal density, size and color.
 2. Plants lacking compactness or proper proportions or plants which are weak or thin will not be accepted. Plants which have been cut back from larger grades to meet specified requirements will not be accepted. Plants within a single species which have been specified to be grown to matching form and sizes will not be accepted if disconformity exceeds 10 percent of the average.
- F. Inspections:
1. Acceptance: All plants selected for growing and ready for delivery shall be subject to acceptance inspections by the Owner's Representative at the growing grounds in the San Francisco Bay Area prior to delivery.
 2. Interim Inspections: Growing grounds shall be open to any duly appointed agent or representative of the Buyer to allow inspections of the condition and rate of growth. The quality of the plants under contract for proper growing shall be subject to inspection, comments and refusal during the dates of inspection at the growing grounds.
- G. Analyses of Samples and Tests:

1. Sampling: Owner's Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time. Furnish samples upon request.
2. Rejected materials: Remove rejected materials immediately from the growing area and replace with accepted substitutions of designated materials at Grower's expense.

1.6 SELECTION, TAGGING AND ORDERING OF PLANT MATERIAL

- A. Documentation: Submit documentation with the contract growing proposal that all plant materials have been located.
- B. Review: Submit a written request for review of plant materials and quantity at place of growth for
- C. Owner Representative's review and approval prior to award of contract.
- D. Transportation: Grower shall accompany Owner's Representative to all review[s] of plant materials at the place of growth. Owner's Representative will review and tag plants at place of growth for contract growing.

1.7 PRODUCT, STORAGE, [DIGGING] AND HANDLING:

- A. Labeling: Furnish standard products in standard box containers bearing original labels legibly showing quantity, analysis, genus/species and name of manufacturer/grower.
- B. Storage of Containerized Materials: Store products with protection from weather or other conditions which would damage or impair the effectiveness of the product.
- C. Handling:
 1. Do not lift or handle plants by tops or stems at any time. Do not bind or handle plants with wire or rope at any time except boxed rootball.

1.8 DELIVERY

- A. Deliver plants in kind and quantity, as requested by Buyer upon 2 weeks notice, conforming with a delivery schedule furnished by the landscape contractor.
- B. At the time of delivery of material for planting provide the Owner's Representative with certification of Contractor's acceptance of plant material for transfer of warranty from Grower to Contractor.

PART 2 PRODUCTS

2.1 PLANT MATERIALS

- A. General:
 1. Growing Conditions: Plants shall be nursery-grown in accordance with standard horticultural practices under climatic conditions similar to those of the intended job site.
 2. All plants shall be fully leafed, symmetrical, tightly knit, so trained or favored in number of branches, compactness and symmetry.
 3. Vigor: Plants shall be sound, healthy and vigorous, well branched and densely foliated. They shall be free of disease, insect pests, eggs, or larvae. They shall have healthy, well-developed
 4. root systems. Plant shall be free from physical damage or adverse conditions which would prevent thriving growth.
 5. Condition of Root System of Container - Grown Plants: Samples must prove to be completely free of circling, kinked or girdling root.
 - a. Trunk surface and center inspection by Owner's Representative at the job site, if five [5] kinked, circling or girdling roots, all plants of that species will be rejected.
 6. Field dug stock: Verify that all field dug plants are provided with adequate rootball to guarantee successful transplantation.
- B. Measurement:

1. General: Take caliper measurement at a point on the trunk 6 in. above natural ground line for trees up to 4 in. in caliper and at a point 12 in. above the natural ground line for trees over 4 in. in caliper.
 2. Measure foliage across mean foliage dimension when branches are in their normal upright position. Foliage origin along main trunk shall be measured from soil line.
 3. Height and spread dimensions specified refer to main body of plant and not branch tip to tip.
 4. Properly trimmed plants shall measure the same in any direction. If a plant is unevenly grown, it shall be classified in the size category of the smallest dimension.
 5. Size Range: If a range of size is given do not supply plant materials less than the minimum size. Not less than 40 percent of the plants shall be as large as the maximum size specified. The measurements specified are the minimum sizes acceptable and are the measurements after pruning, where pruning is required.
 6. Plants that meet the measurements specified, but do not possess a normal balance between height and spread shall be rejected.
- C. Unacceptable Trees: Trees which have damaged or crooked leaders, will be rejected. Trees having a main leader shall not have been headed back. Trees with abrasions of the bark, sunscales, disfiguring knots, or fresh cuts of limbs over one and one-half inches to two and one-half inches which have not completely callused, will be rejected.
- D. Pruning: Do not prune plants immediately before delivery. Consult Owner's Representative for pruning after installation.
- 2.2 ACCESSORIES**
- A. Fertilizers, Herbicides and Insecticides: As per submitted Schedule of Maintenance.
- B. Containers, Stakes, Ties, Guy Wires and Other Materials: Per standard nursery practices.
- C. Water: Clean, potable and fresh.
- 2.3 EQUIPMENT**
- A. General: Use only the proper tool for each job, maintain in sharp, properly-functioning condition.
- B. Insect/Disease Prevention: Clean and sterilize pruning tools prior to usage. Take all measures to prevent introduction of insect or disease-laden materials from coming in contact with contract grown plants.

PART 3 EXECUTION

3.1 WATERING

- A. Field Grown Material:
1. Deep root water as required to promote deep healthy roots. Maintain sufficient moisture throughout root zones as required for optimal growth.
 2. Drainage: Provide and maintain adequate drainage with full and proper water percolation.
 3. The drainage system shall conform to soil and slope conditions, weather and changes of season. Regularly inspect the drainage systems in operation, including the following:
 4. Monthly visual inspection for over-wet or over-dry areas due to seasonal variation in irrigation requirements.
 5. Monthly inspection during rainy season, for proper drainage of storm water.
 6. Containers shall not sit in stagnant water.
- B. Container Grown Material: Provide emitter irrigation for all containerized materials. Regularly inspect for malfunctioning equipment and seasonably adjust amount of irrigation as required.
- C. Soil Probe: All plant material shall be probed with a soil sampling probe to a depth of 3 to 6 inches for container grown material at least twice a month to ascertain the subsoil conditions and make adjustments to the irrigation schedule as required.
- D. Supplemental Hand Watering: Use a water wand to break the water force. Do not permit use of "jet" type watering equipment. Do not permit crown roots to become exposed to air through dislodging of soil and mulch.

3.2 FERTILIZATION

- A. General: Fertilizing procedures should reflect the recommendations of the fertilizer program. Contractor shall submit fertilization program for review and acceptance by Owner's Representative.

3.3 GENERAL PRUNING REQUIREMENTS:

- A. General:
1. Grower is responsible for pruning trees with either central or multi-leaders as directed by the Owner's Representative.
 2. Pruning Objectives:
 - a. To promote structural strength;
 - b. To accentuate the plant's natural form and features; and
 - c. To achieve the specifications described in the Plant List.
- B. Trees with a strong central leader generally need little or no pruning. As a general rule, the single, central leader should never be radically topped or cut back which will create an unnatural multi-leader form and an abundance of weak vegetative growth. The University of California publication ACT-288, "Pruning Landscape Trees," is a good general reference to proper pruning.

3.4 SPECIFIC PRUNING REQUIREMENTS

- A. Trees:
1. Prune trees to select and develop permanent scaffold branches that are smaller in diameter than the trunk or branch to which they are attached, and which have vertical space of 18 inches to 48 inches and radial orientation so as not to overlay one another.
 2. Prune trees to eliminate parallel or competing branches, diseased or damaged growth, and narrow V-shaped branch forks that lack strength. Reduce chance of wind damage by thinning out crowns.
 3. Prune trees to maintain growth within space limitations, maintaining a natural appearance and balancing crown with roots.
 4. Under no circumstances shall stripping of lower branches, "raising up", of young trees be permitted. Retain lower branches in a "tipped back" or pinched condition to promote caliper trunk growth. Do not cut back to fewer than six buds or leaves on such branches.
 5. Thin out and shape evergreen trees when necessary. Do primary pruning of deciduous trees during the dormant season. Do not permit any pruning of trees prone to excessive "bleeding" during growth season.
 6. Remove all suckers, water sprouts, crisscrossing, dead, diseased, broken, heavily laden side branches, and all stubs left by previous pruning.
- B. Large Cuts:
1. Make all cuts clean and close to the trunk, parallel to shoulder rings, with the top edge of the cut at the trunk or lateral branch, without cutting into the branch collar. "Stubbing" will not be permitted. Cut smaller branches flush with trunk or lateral branch.
 2. Branches larger than two [2] inches shall be pre-cut in three stages to prevent splitting or peeling of bark. Make the first two cuts 18 inches or more from the trunk to remove the resulting stub.
- C. Terminal Branch: The final cut on all terminal branches must be cut back to a lateral having a basal diameter at least 1/3 the diameter of the cut. The cut should be close to the top of the lateral, but not so close as to cut into the shoulder of the lateral. The slant of the cut should be on a line with the angle of the lateral.

3.5 STAKING AND GUYING OF TREES

- A. Inspect stakes and guys at least once a month to check for rubbing that causes bark wounds. Plant is to be plumb in container at all times.

3.6 INSECT AND DISEASE CONTROL

- A. Inspection: Inspect all plant materials for signs of stress damage and potential trouble from the following:
1. Presence of insects, moles, field gophers, ground squirrels, snails and slugs in field growing areas.
 2. Discolored or blotching leaves or needles.
 3. Unusually light green or yellowish green color inconsistent with normal green color of leaves.

- B. Personnel: Perform spraying for insect, pest and disease control only by qualified, trained personnel.
- C. Materials: As per accepted products listed in submittal herein specified.

3.7 TERMINATION OF THE GROWING CONTRACT

- A. Pre-shipment Review:
 - 1. Thirty days prior to the scheduled shipping date, Grower shall confirm date with Buyer and coordinate all aspects of delivery.
 - 2. Submit to both Buyer and the Owner's Representative a written Notice of Shipment two [2] weeks prior to the final shipping date.
 - 3. Owner Representative shall perform a final review for acceptance of all plant materials prior to shipment to the site.
 - 4. Work requiring corrective action or replacement shall be performed within one [1] week of this review.
- B. Corrective Work:
 - 1. Perform corrective work and materials replacement in accordance with the contract at no cost to the Buyer.
 - 2. After corrective work is completed, the Grower shall again request a Review for Pre-shipment
 - 3. Acceptance as outlined above.
 - 4. Continue maintenance of all contract grown materials until such time as all corrective measures have been completed and accepted, and plants are ready to be shipped.
- C. Conditions for Acceptance of Plants at End of Growing Contract
 - 1. Each plant shall be alive and thriving, showing signs of growth and no signs of stress, disease, or any other weakness or damage from shipping.
 - 2. At no expense to Buyer, replace all plants not meeting these conditions.
- D. On-Site Final Acceptance: Upon shipment to the job site, the Owner's Representative shall make a final inspection for acceptance of all plant materials. Upon Final Acceptance, the Buyer will assume responsibility for maintenance of the materials and plants.

END OF SECTION