

329000 EXTERIOR PLANTS

- 1) General: Landscaping should be kept simple to allow mechanized equipment to be used whenever possible. Soil berms and landscaping are desired for aesthetic value in parking areas, but plants and trees with little to no maintenance must be specified. Plowing patterns, and snow “dumping” areas must be considered in developing this landscaping. Confer with Assitant Director of Campus Services. Avoid extensive planting of flower beds. Provide an adequate number of receptacles and hose bibbs, carefully located and freeze-protected. Perennial flower beds will be considered providing that they are low maintenance year-round. Coordinate size of plantings with the University.
- 2) Planting Season:
 - a. Deciduous Trees and Shrubs: October 15 to May 15.
 - b. Evergreen Trees: March 1 to May 15; August 1 to September 15.

The planting periods may be extended or reduced according to prevailing weather and soil conditions at the discretion of the Professional.

- 3) All plants shall have a well-branched, vigorous and balanced root and top growth and, unless otherwise specified, shall conform to ANSI Z60.1 standards. They shall be free from disease, injurious insects, mechanical wounds, broken branches, decay or any other defect. Trees shall have reasonably straight trunks with well-balanced tops and a single leader. Deciduous plants, other than those specified as container grown, shall be dormant.
 - a. Sizes:
 - 1) Deciduous non-flowering trees: 3-4" diameter.
 - 2) Deciduous flowering trees: 2" diameter, 8-10' height.
 - 3) Evergreen trees: 8-10' height.
 - 4) Shrubs: 5 gallon bucket.
 - 5) For shrubs and bushes specify minimum sizes in terms of gallons for containers or ball sizes, crown, etc., to provide for the appearance of fairly mature landscaping immediately after planting.
 - b. Crown: The crown form should not be significantly deformed by wind,

pruning practices, pests or other factors. Branches shall be free from insect and disease problems. Shoot growth (length and diameter) throughout the crown should indicate a normal growth rate for the species/cultivar, rather than an abnormally fast or abnormally slow growth rate.

- 1) Live Crown Ratio should be at least 66%. One-half or more of the foliage should be on branches originating on the lower two-thirds of the trunk, and one-half or less should originate on the upper one-third.
- 2) Central Leader: Trees shall have a single, relatively straight central leader and tapered trunk. They shall be free of codominant stems and vigorous, upright branches that compete with the central leader. If the original leader has been headed, a new leader at least $\frac{1}{2}$ (one half) the diameter of the original leader shall be present. Maintaining a single, central leader is preferable. Heading and retaining a leader is acceptable. Heading without retaining a leader is unacceptable.

c. Main Branches (scaffolds)

- 1) Branch spacing and distribution: Branch distribution is significant in that it affects the future form and structural integrity of the tree.
- 2) Branches should be uniformly and symmetrically spaced around and vertically along the trunk without excessive gaps, and should form a generally symmetrical crown typical for the species.
- 3) Adjacent scaffold branches shall not be directly above each other on the same side of the tree.
- 4) Major branches shall not be oriented vertically or nearly vertical with the trunk. Scaffold branch attachments shall be free of included bark.
- 5) Branches should not cross, rub, or contact each other.
- 6) Water sprouts are generally considered undesirable and should be pruned.
- 7) With the exception of species that exhibit whorled branching, only a single branch should originate from a node on the stem. Clustered branching (many branches originating from the same point on the trunk or stem) is not acceptable.
- 8) No branch tips shall be taller than the leader. Vertical branches competing with the leader shall be removed or subordinated.

d. Leaves: The size, color, and appearance of leaves shall be typical for the time of

year and growth stage of the species/cultivar. Leaves shall not be significantly stunted, misshapen, tattered, discolored (chlorotic or necrotic), or otherwise atypical.

- e. Pruning Cuts: All pruning cuts shall comply with the latest ANSI A-300 (Part 1) – Pruning standard.
 - 1. All branch removal cuts shall be just outside the branch bark ridge and branch collar. Pruning activities shall not leave branch stubs or flush cuts.
 - 2. Hedge-like cuts (reduction and tipping cuts made on multiple branches) to make the crown uniform are not acceptable.
 - 3. Pruning wounds shall be cut cleanly and shall not have tattered and ragged bark tears.
 - 4. When subordination pruning cuts are used, the cuts should be made just above outward facing branches or buds. Cuts made along a branch should be made at a lateral branch or bud: intermodal branch cuts shall not be made. There shall be live buds or foliage at the ends of all branches.
 - 5. Branches shall not be pruned immediately prior to delivery unless they are dead, damaged, or diseased.

- f. Trunk:
 - 1. The tree trunk should be fairly straight, vertical and free of wounds (except properly-made pruning cuts), sunburned areas, conks (fungal fruiting bodies), wood cracks, bleeding areas, signs of boring insects, galls, cankers/lesions and girdling ties.
 - 2. Tree trunk diameter and taper shall be sufficient so that the tree will remain vertical without the support of a nursery stake. Tree height and trunk diameter are typical for the age, species/cultivar and ball or container size. The caliper to height ratio (trunk taper) shall conform to the most current ANSI Z60.1.
 - 3. The location of the trunk should be centered in the root ball.

4. Trunk Flare. The trunk flare or root flare should be visible at the surface of the rootball. If not visible, the trunk flare shall be within 1” of the surface of the rootball. There should be no evidence of roots above the trunk flare. The trunk flare should be visible for 360 degrees around the base of the trunk. The absence of a continuous trunk flare indicates that there may be girdling roots or a J-root present.

g. Root System:

1. Distribution

- a. Vertical –

- i. Fibrous roots (and to some extent, structural roots) should be distributed throughout the entire vertical height of the root ball.
 - ii. There shall be no absence of roots in the upper portion of the root ball. Absence of roots in the upper portion of the root ball indicates that the trunk flare is too deep in the root ball.

- b. Horizontal –

- i. The minimum root spread of a balled and burlapped tree should be at least the distance specified as “minimum diameter rootball” in ANSI Z60.1 ii. There should be an abundance of fibrous roots evenly distributed throughout each quadrant of the root ball.
 - ii. There shall be at least three buttress roots evenly distributed around the flare.

2. Conformation –

- a. The branching pattern of roots should consist of an even distribution of structural roots branching into smaller and smaller fibrous roots.
 - b. Roots should generally grow in a direction away from the trunk. The root system should be free of circling, kinked or girdling roots throughout the root ball. Soil removal near the root collar may be necessary to inspect for circling and or kinked roots.
 - c. The root system shall be free of J-roots.
 - d. There should be no adventitious roots growing from the trunk.

h. Harvesting Inspection:

1. The location of the trunk flare shall be at the top of the root ball prior to digging with no soil covering.
2. The root spread shall at least equal the minimum specified ball diameter required by the most current ANSI Z60.1.

i. Moisture Status:

1. At time of inspection and delivery, the rootball shall be moist throughout.
2. The crown shall show no signs of moisture stress as indicated by wilted, shriveled or dead leaves or branch dieback.
3. The roots shall show no signs of excess soil moisture conditions as indicated by poor root growth, root discoloration, distortion, death or foul odor.
4. Excess dryness in the rootball is unacceptable at any point after the tree is harvested and before it leaves the nursery.

j. Topsoil:

1. Weathered surface soils (A Horizon), or amended unweathered topsoil (B Horizon), or blend of both, free from hard fragments and stones larger than 1 inch across in the greatest dimension, objectionable salts, noxious woods and plants, partially disintegrated debris, or other materials inferior to the surface soils or that would be toxic or harmful to plant growth.

k. Grading Analysis:

<u>Sieve</u>	<u>Minimum Percent Passing</u>
2"	100
1/2"	90

- l. Peat: Natural product containing a negligible amount of woody matter.
- m. Manure: Mushroom manure free from clumps and foreign material larger than 1 inch and substances toxic to plant growth and noxious weed seed.
- n. Fertilizer; 16-8-16 fertilizer in 4-ounce, 8-year release, heat-sealed polyethylene packets.
- o. Planting Mixtures:
 - 1) Backfill should consist of the native soil from the planting pit unless this soil is unfit for planting. In the event backfilling is necessary it should be mixed at the ratio: Four parts by volume of native topsoil from the pit and one part composted organic matter such as composted leaves or mushroom soil, all mixed by hand or rotary mixer.
 - 2) For backfilling plant pits of evergreen and broadleaf plants: Four parts by volume of native topsoil from the planting pit and one part of peat humus (or composted organic matter such as composted leaves or mushroom soil), all mixed by hand or rotary mixer.
- p. Minimizing weeds in new planting:
 - 1) Weed Barrier Mat: Should only be used in landscape beds where it separates soil from a hardscape product such as river stone or screenings. This application only promotes the separation of the underlying soil and the hardscape material and minimizes the mixing of the two substrates. It should not be used to separate organic or wood mulch from the underlying soil. If plants are to be planted in the stone area the hole in the matting should extend at least 12" from the outside diameter of the plant for shrubs and perennials. The planting hole in the matting should extend at least 36" from the outside edge of all trees.
 - 2) All new landscape beds should have an application of a pre-emergent product such as Snapshot, Treflan, or similar industry accepted product.
- q. Mulch: Should be a dyed brown and should be similar in appearance to mulch being used by the University at the time of planting.
- r. Stakes and Guys:

- 1) Wood Stakes: Rough sawn red or white cedar, southern yellow pine, or approved hardwoods; free from knots, rot or other defects.
- 2) Ground Anchors: 4" universal iron type, 4" auger type, or wooden "deadmen"
- 3) Turnbuckles: Galvanized steel, nominal 1/8" x 6".
- 4) Wire: #12 gauge galvanized steel.
- 5) Chafing Guards: New or used 2-ply reinforced rubber or plastic hose; use all the same color on the project.
- 6) The use of a heavy-duty poly chain lock product is the preferred product to be used when anchoring trees.

s. Maintenance and Replacement:

- i. Contractor shall be responsible for keeping all plants in healthy, growing condition until acceptance.
- ii. During planting and until final acceptance, Contractor shall maintain plants and work incidental thereto by replanting, plant replacement, watering, pruning, shearing, spraying, weeding, reguying, and by performing other operations of care for promotion of root growth and plant life so that work is in satisfactory condition at the completion of the Contract.
- iii. During the guarantee period, Contractor shall promptly replace plants that are dead or are in unhealthy, unsightly or badly impaired condition; replace with healthy plants as soon as it is reasonably possible; do not make replacements in any season unfavorable for planting. Additionally during this guarantee period, the contractor will correct any defects that occur that can be attributed to improper installation including, but not limited to, trees that lean or are not straight, and the planting of trees too deep in the planting pit so the root flare is not at, or slightly above, grade.
- iv. When any plant is replaced during the guarantee period, the guarantee period for the replaced plant shall be one (1) year from the date the plant was accepted by the Professional.
- v. Any damage done to the lawn and seeded areas (including the remediation

of compaction) shall be repaired to a condition generally recognized as acceptable and to the satisfaction of the Professional; additional cost repaired for restoration work shall be at Contractor's expense.

- t. Care shall be exercised in planting material along walkways, driveways and adjacent to lighting fixtures. This plant material shall not block sight-lines, walkways or lighting fixtures when fully matured.