KCMO Parks and Recreation Department --Forestry Technical Services

Street Tree Planting Requirements

A. PERMISSION TO PLANT: No tree may be planted on City right-of-way or City owned property without written permission from the City Forester's office.

1. Developers are required to submit **TWO** full-sized hard copies of a street tree planting design that includes the following information.
    a. Tree species and size identified.
    b. Location/placement of trees on map of proposed plat.
    c. Location of proposed or existing utilities, including streetlights. Include a legend for the utilities.
    d. Easement width between sidewalk and curb. In the case of no sidewalks, then include the width of the easement outside of the curb or road.
    e. Width of tree planting area. Generally, this is the space between the curb and sidewalk, or the curb and back of City right-of-way. Actual width must be specified on plat.
    f. Approximate date when street trees will be planted (if known).
    g. <u>This document is required to be on the planting plan, FIGURE 1 may be omitted.</u>
    h. Self-addressed stamped envelope if approved copy to be returned via US Postal Service.

    ALL PLANS SUBMITTED WITHOUT THE ABOVE COMPONENTS WILL BE REJECTED.

2. Tree planting permits are available upon inspection by the City Forester's office.

3. A plat approved by the City Forester's office serves as a permit for developers.

B. TREE LOCATIONS: Determine planting locations using the following guidelines:

1. Space 30 - 60 feet apart. Within this range, space narrow canopied trees closer together and wider canopied trees farther apart. Closer spacing is allowed in some landscaping situations, such as office or business planting with certain tree species.

2. Place trees not closer than 50 feet from an approach corner with a traffic signal or sign.

3. Place trees not closer than 40 feet from an approach corner without a traffic signal or sign.

4. Place trees not closer than 30 feet from a non-approach corner.

5. Place trees not closer than 15 feet from a street light.

6. Place trees not closer than 8 feet from a driveway.

7. Place trees not closer than 5 feet from a fire hydrant.

8. Place trees not closer than 5 feet from a storm box, gas valve, water valve, cable box, or any other above ground utility.

9. Do not place trees with an average height of more than 40 feet under overhead wires.

10. Do not place trees in a bus stop zone where passengers enter and exit bus.

C. TREE SIZE: Broadleaf trees must have a minimum caliper of 2.0 inches; and evergreen trees must have a minimum planted height of five (5) feet.

D. APPROVED TREES: Plant preferred trees from the current planting list (FIGURE 1: attached) provided by the City Forester's office. Alternatives are acceptable, but must be approved by the City Forester's office.

E. SPECIES DIVERSITY: Species diversity is an important component of a sustainable urban forest. We require developers to plant a diverse range of trees in accordance with the following:

1. If less than 50 trees, then not more than 50% may be of a single genus.

2. If 50-100 trees, then not more than 50% of a single genus, and not more than 30% of a single species.

3. If over 100 trees, then not more than 30% of a single genus, and not more than 20% of a single species.

F. SIZE OF TREE & WIDTH OF RIGHT-OF-WAY: Trees planted in public right-of-way must have adequate clearance from the curb and sidewalk within that R.O.W. This ensures the healthy growth of the tree, as well as preserving the integrity of the surrounding infrastructure. When choosing a tree species, reference its maximum dbh. As a general rule, use the following five size classifications. For more specific planting widths regarding specific tree species, reference FIGURE 1.

1. If R.O.W. is less than 5' in width, **DO NOT plant**.

2. If R.O.W. is between 5' and 6' in width, plant tree species with a maximum dbh of 24".

3. If R.O.W. is between 6' and 8' in width, plant tree species with a maximum dbh of 42".

4. If R.O.W. is between 8' and 9' in width, plant tree species with a maximum dbh of 50".

5. If R.O.W. is greater than 9" in width, plant any tree species on the recommended tree list.

G. TREE PLANTING SPECIFICATIONS (FIGURES 1- 4)

1. The representative from the City Forester's office may inspect any phase of this operation and may reject any plant material improperly handled during any phase of this operation. Nothing in this Section shall be interpreted as relieving the developer of the responsibility of providing healthy, viable plants, nor shall it have any effect upon the terms of the warranty specified.

2. Protection of Existing Plants: Do not store materials or equipment, or operate equipment under branches of any existing trees, except as actually required for planting in those areas. If existing plants are damaged during planting, Developer shall replace such plants with the same species and size as those damaged at no cost to Parks and Recreation. Determination of the extent of damage and value of damaged plant shall rest solely with the representative of the City Forester. (**See FIGURE 5 for tree protection guidelines).**

3. All broadleaf trees shall be 2" minimum caliper and evergreen trees must have a minimum planted height of five (5) feet, smaller sizes require prior approval from the City Forester.

4. All plants shall be symmetrical in growth with balanced root and top growth and shall be No. 1 in grade or type, conforming to the latest edition of "American Standard of Nursery Stock", ANSI Z60.1 (2014) referenced herein. Trees shall have a single straight trunk, single dominant central leader (when characteristic of the species), and a well-balanced branch structure.

5. During transportation of plant material, care will be taken to prevent injury or drying out of the trees. Trees will be rejected if the roots are dried out or if the tree has been damaged during transit. Plants must be protected at all times from sun or drying winds. Plants shall be lifted and handled with suitable support of the soil ball to avoid damage to the trunk of the tree.

6. Plant material specified as Balled and Burlapped (B&B) must have a ball of firm earth from the original soil in which the plant grew. The ball shall be wrapped with non-synthetic, rottable burlap and tightly tied with non-synthetic, rottable twine to hold it firm and intact. Any plants with loose or broken balls or manufactured balls will be rejected. Wire baskets shall be used where necessary to protect the balls.

7. Plants shall be nursery grown and shall have received the proper fertilizing, watering, root pruning, and other care as is normally used in nursery practice. Collected stock will be rejected. Trees larger than 1-1/2" caliper shall have been transplanted or root pruned at least once in the past 3 years. Stock shall consist of plants grown under natural conditions in soils and climate compatible with the city of Kansas City. Plants shall have been grown at a latitude not more than 200 miles north or south of the planting location unless the provenance of the plant can be documented to be compatible with the latitude and cold hardiness zone of the planting location.

8. Plants shall be free from defects, disease, insects, eggs or larvae and injuries or other conditions that would prevent vigorous growth. The City reserves the right to reject any and all plants that in its opinion are poor in quality, health, and/or form.

All field grown trees shall be marked to indicate the tree's north orientation in the nursery. All shipments of plant stock shall comply with existing State and Federal laws and regulations governing plant disease and infection, and interstate movement of nursery stock.

9. Fertilizer: Fertilize trees after planting with a "Plant Starter/Root Stimulator" liquid solution applied according to the manufacturer's instructions.

10. Mulch: Wood mulch shall consist of bagged or bulk aged wood chips, or shredded hardwood bark. Walnut bark or chips are not acceptable.

11. Tree Guards: Each tree shall be protected after planting with a plastic protector, 9" nominal height, 4" minimum diameter. Material shall be vented polyethylene or equivalent light in color **not** black.

12. Excavation for Planting: Planting holes shall be a minimum of 10" larger in diameter than the spread of roots or size of root ball. The bottom of the hole shall be no deeper than the height of the root ball so that the tree ball is placed on solid earth. Planting holes shall have approximately 45 degree vertical sides and flat bottoms. All underground utility locations are to be located in the planting areas. Missouri law requires that a locate request be placed before beginning any excavation.

13. Where turfed areas are damaged by planting operations, they shall be restored and replaced with equal quality turf.

14. Setting and Backfilling: Set balled and burlapped trees in the hole with the north marker facing north unless otherwise approved by the City Forester or his designee. Set all trees plumb and straight. **Set at such a level that the top of the root flare, the first major root, is at or slightly above ground level. If the grower has placed excess soil on the top of the root ball covering the root flare then the excess soil shall be removed.**

15. Cut and remove all ties from the ball. Remove the wire basket or cut and remove the top 2/3 of the basket. Cut and remove the top 2/3 of the burlap. Do not turn under and bury portions of burlap at top of ball. In no case should the burlap be pulled out from under the balls. Do not plant trees whose balls have been broken during the planting process.

16. Plants grown in containers shall be of appropriate size for the container as specified in the latest edition of "American Standard of Nursery Stock", ANSI Z60.1 (2014) referenced herein and shall be free of circling roots on the exterior and interior of the root ball.

17. Soil used for backfilling all plants shall consist of the soil excavated at the time of planting. Backfill each hole about 2/3. Flood the plant with water and allow soil to settle. Root stimulator shall be applied at the time of watering. Backfill the remaining 1/3 of the hole not exceeding the root collar or the top of the root ball. All excess excavated soil shall be removed from the planting site.

18. In areas where compacted soil exists loosen soil beyond the planting hole approximately 3 feet in diameter from the base of the tree.

19. Application of Mulch: Place 2 to 4 inches of mulch around all trees to cover an area approximately 3 feet in diameter. Do not mound mulch against the tree trunk.

20. Final Operations: Remove all remaining tags, ties, tree wrap and transit protectors from trees. Install tree guard as specified. Stakes and guys are not required but may be needed where trees are located in extremely windy conditions or required by the City Forester or his designee. In no case shall trees that have settled out of plumb be pulled upright using guy wires. Staking and guying method should be approved by the City Forester before installing.

21. Remove all excess and waste materials from the site promptly. Existing turf or any other conditions damaged during planting shall be repaired. When completed, the area shall be neat and clean.

H. PLANT GUARANTEE AND MAINTENANCE REQUIREMENTS

1. The City Forester or his designee shall have the right to inspect all trees planted in the City right-of-way prior to planting.

2. Rejected trees shall be promptly removed and replaced.

3. Maintenance shall begin immediately after each plant is planted and continue until its acceptance has been confirmed by the City Forester or his designee.

4. All trees shall be guaranteed by the Developer to be in vigorous growing condition at the time of planting. Acceptance of plant material shall be for general conformance to specified size, character, and quality and shall not relive the contractor of responsibility for full conformance to the contract documents, including correct species and/or cultivar.

5. Developer shall promptly raise and straighten trees that settle or lean, for a period of 18 months.

6. Developer will treat for any disease, or insect problem that could cause significant harm to the tree.

7. Developer will guarantee and replace any tree that dies for a period of 18 months. The City Forester or his designee shall have the right to inspect trees for growing condition, and require replacement if necessary. To be considered acceptable, plants shall be free of dead or dying branches and branch tips and shall bear foliage of normal density, size, and color. Replacements shall be subject to all requirements stated in this specification. Replacement trees will also be guaranteed for a period of one year from the date that they were planted

   Developer will not be held responsible for trees that are vandalized, or otherwise damaged due to circumstances beyond the contractor's control. Any trees identified as dying due to circumstances beyond the control of the developer, must be inspected and verified by a representative from the City Forester's office.

Figure 1: Approved Trees

Columnar (trees with a spread of less than 15'-20')

Common Name	Scientific Name and Cultivar(s)	Max DBH for KCMO (inches)	Minimum Planting Area (feet)
Crimson Spire	Quercus robur x Q. alba	38	7x7
Eastern Redcedar	Juniperous virginiana 'Taylor'	30	6x6
European Hornbeam	Carpinus betulus, 'Fastigiata'	36	7x7
Ginkgo	Ginkgo biloba, 'Princeton Sentry'	27	6x6
Hackberry	Celtis occidentalis 'Prairie Sentinel'	30	6x6
Red Maple	Acer rubrum 'Armstrong'	12	5x5
Regal Prince Oak	Quercus robur x Q. bicolor, 'Long'	48	8x8
Sugar Maple	Acer saccharum, 'Endowment'	36	7x7
Tulip tree	Liriodendron tulipfera, "Fastigiatum'	33	7x7
Zelkova	Zelkova serrata, 'Musahino'	24	6x6

Small (trees with a mature height of less than 30')

Common Name	Scientific Name and Cultivar(s)	Max DBH for KCMO (inches)	Minimum Planting Area (feet)
American Hornbeam	Carpinus caroliniana 'Native Flame®' JFS_KW6	30	6x6
American Hophornbeam	Ostrya virginiana	12	5x5
Eastern Redcedar	Juniperous virginiana 'Hillspire'	30	6x6
Lilac	Syringa reticulate, "Japanese Lilac Tree'	12	5x5
Pacific Sunset Maple	Acer truncatum x A. plantanoides 'Warrenred'	24	6x6
Paperback Maple	Acer griseum	12	5x5
Redbud	Cerces canadensis, 'Forest Pansy'	24	5x5
Serviceberry (single stem)	Amelanchier grandiflora 'Robin Hill', Autumn Brillance'	16	5x5
Serviceberry (single stem)	Amelanchier arborea 'Downy', ' Shadbow', 'Juneberry', 'shadbush'	16	5x5
Serviceberry	Amelanchier laevis	16	5x5
Sugar Cone Maple	Acer saccharum 'Sugar Cone'	16	5x5
Tatarian Maple	Acer tataricum, 'Summer Splendor'	18	5x5
White Flowering Dogwood	Cornus florida	20	5x5
Whitebud	Cercis canadensis f. alba 'Royal White'	24	5x5
Zelkova	Zelkova serrata 'City Sprite'	24	5x5

Medium (trees with a mature height of less than 40')

Common Name	Scientific Name and Cultivar(s)	Max DBH for KCMO (inches)	Minimum Planting Area (feet)
Eastern Redcedar	Juniperous virginiana 'Canaeritii'. 'Burkii'	30	6x6
Black Tupelo	Nyssa sylvatica 'Hayman Red' 'Afterburner Tupelo', 'David', Firestarter 'JFS-red'	36	7x7
Emerald Sunshine Elm	Ulmus propinqua, 'JFS-Beirberich'	46	7x7
Frontier Elm	Ulmus carpinifolia x parvifolia	46	7x7
Linden	Tilia americana 'Lincoln'	36	7x7
Honey Locust	Gleditsia triacanthos var. inermis, 'Imperial'	36	7x7
Overcup Oak	Quercus lyrata	40	7x7

Large (trees with a mature height of more than 40')

Common Name	Scientific Name and Cultivar(s)	Max DBH for KCMO (inches)	Minimum Planting Area (feet)
Bald Cypress	Taxodium distichum 'Shawnee Brave'	44	8x8
Bur Oak	Quercus macrocarpa	50	8x8
Caddo Maple	Acer saccharum, "Autumn Splendor'	42	8x8
Chinkapin Oak	Quercus muehlenbergii	40	7x7
American Elm	Ulmus americana 'Valley Forge', 'Jefferson', 'Princeton', 'New Harmony'	48	8x8
Ginkgo	Ginkgo biloba, 'Autumn Gold'	30	7x7
Hackberry	Celtis occidentalis 'Chicagoland'	30	7x7
Kentucky Coffee Tree	Gymnocladus dioicus 'Espresso'	36	7x7
Linden	Tilia Americana 'Boulevard', 'Continental Appeal'	42	7x7
Honey Locust	Gleditsia triacanthos var. inermis, 'Shademaster', 'Imperial', 'Skyline'	46	8x8
Northern Red Oak	Quercus rubra	60	8x8
Post Oak	Quercus stellata	24	6x6
Red Maple, Autumn Blaze	Acer x freemanii, "Jeffsred'	36	7x7
Red Maple, Red Sunset	Acer rubrum, "Red Sunset'	36	7x7
Shumard Oak	Quercus shumardii	48	8x8
Silver Leaf Linden	Tilia tomentosa	42	8x8
Sugar Maple	Acer saccharum 'Fall Fiesta', 'Legacy'	36	7x7
Swamp White Oak	Quercus bicolor	60	8x8
Tuliptree	Liriodendron Tulipifera	36	7x7
White Oak	Quercus alba	48	8x8

Limited Application Trees

Common Name	Scientific Name and Cultivar	Max DBH for KCMO (inches)	Minimum Planting Area (feet)
Hedge Maple	Acer campestre	36	7x7
Norway Maple	Acer platanoides, “Emerald Queen’	30	6x6
Norway Maple	Acer platanoides, “Crimson King’	30	6x6

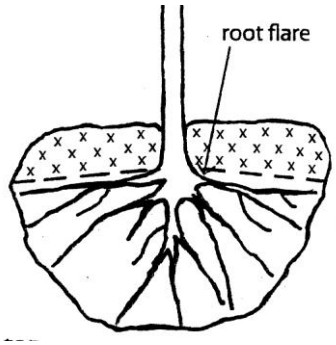
***Limit use* of Hedge and Norway Maples to areas where the surface rooting habit will not be a problem, do not use as a street tree.**

Restricted Street & Boulevard Trees (DO NOT PLANT)

Common Name	Scientific Name and Cultivar
Amur Maple	Acer ginnala
Ash, (all species)	Fraxinus spp.
Austrian Pine	Pinus nigra
Boxelder	Acer negundo
Cottonwood	Populus deltoides
Elm, (all non-DED resistant)	Ulmus spp
Ginkgo, (female)	Ginkgo biloba
Golden Raintree	Koelreuteria paniculata
Locust, (all thorny varieties)	Robinia pseudoacacia
Pear	Pyrus spp.
Scotch Pine	Pinus sylvestris
Silver Maple	Acer saccarinum
Sweetgum, (all fruit bearing)	Liquidambar styraciflua
Tree of Heaven	Ailanthus altissima

FIGURE 2— TREE PLANTING STANDARD DETAIL

Finding the Root Flare:



For balled-and-burlapped trees, probe the top of the soil ball chose to the trunk to find the first roots. You can do this with a stout wire. Check in two or more locations to make sure you've located the top major roots. Leave the burlap in place to make moving the tree easier. Measure the distance from the top of the soil ball to the root flare. Next, subtract that distance from the total depth of the burlapped soil ball.

The distance from the top-most buried root to the bottom of the ball is the correct depth to dig the pit.

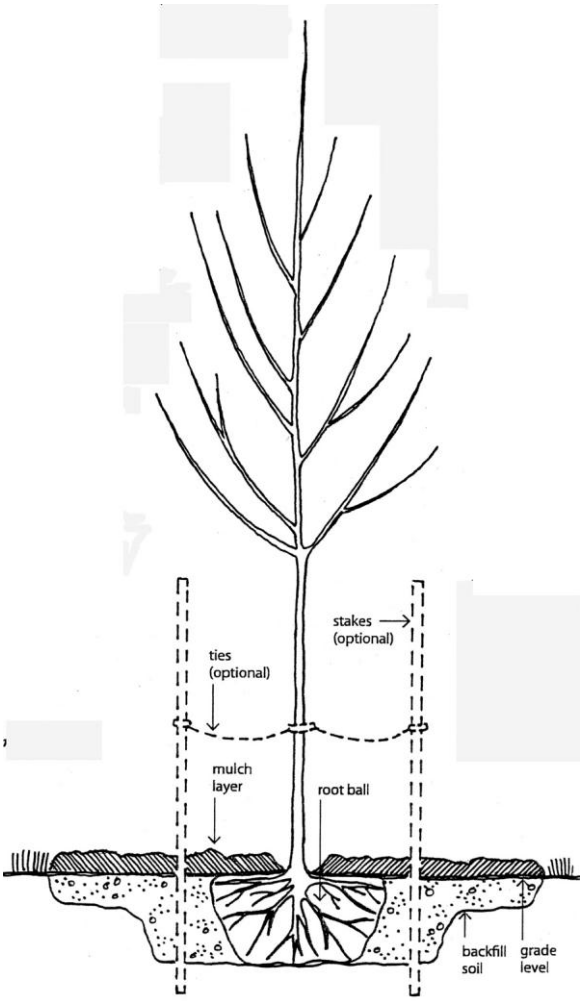


FIGURE 3—TREE PLANTING IN COMPACTED SOIL DETAIL

To test for compacted soil, do a simple percolation test. Dig a hole 12 inches to 18 inches deep and fill it with water. If the water is still in the whole 12 to 18 hours later, then you have compacted or heavy clay soils.

Roots need oxygen, so dig a wide shallow hole three to four times the width of the root ball or container and only half as deep. Mound backfill soil slightly to the top of the root flare, covering the entire excavation. This creates a raised planting bed, which will improve the tree's performance. Soils that hold excessive moisture may need a subsurface drain tube installed below the root ball.

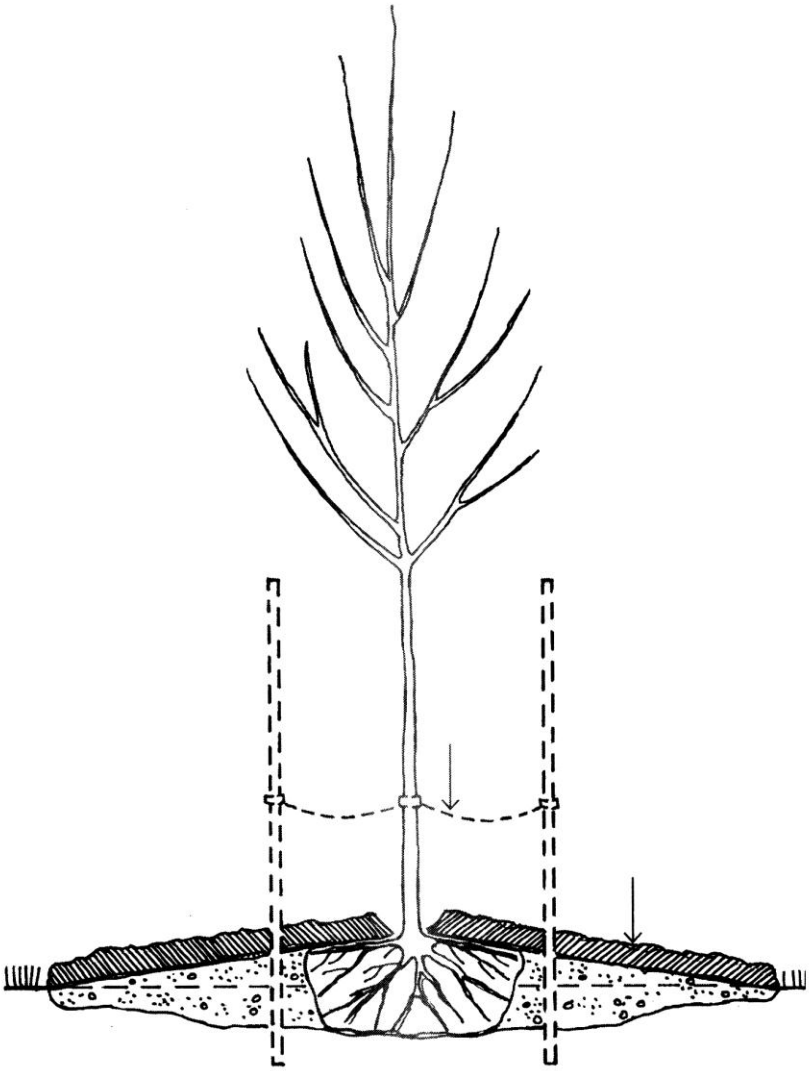
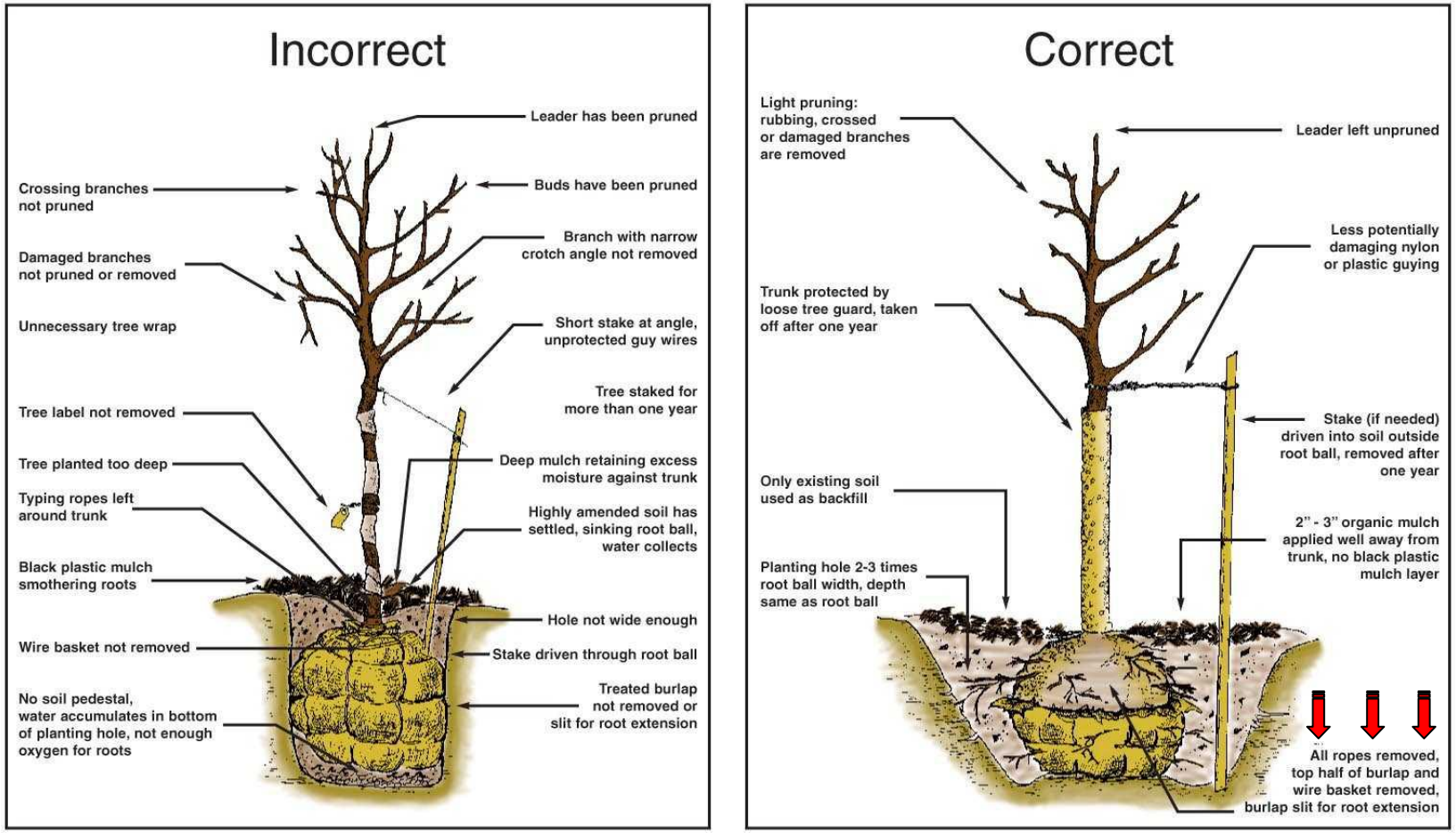


FIGURE 4—PLANTING QUALITY

PRUNING AT PLANTING NOT REQUIRED!

PRUNING SHOULD ONLY BE DONE BY A QUALIFIED ARBORIST OR FORESTER



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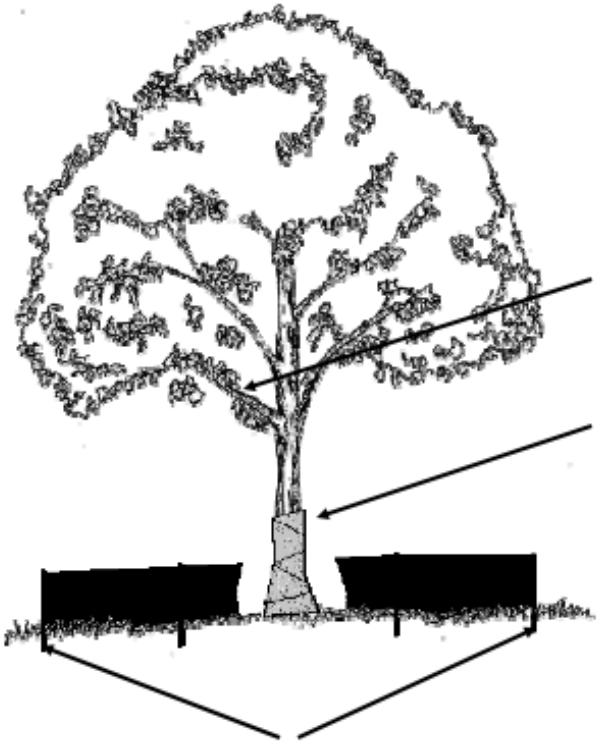
Funds provided by the Urban and Community Forestry Assistance Grants Program of the U.S. Forest Service in cooperation with the Virginia Department of Forestry. © 1995

FIGURE 5—TREE PROTECTION



TREE PROTECTION AREA
The area inside a perimeter established at the Critical Root Zone (CRZ). The CRZ is equal to the dripline (furthest extent of tree canopy) or is equal to one foot radially from the tree for every one inch of trunk diameter at breast height (DBH), whichever is greater.

ZONE 2
LOWER CANOPY PROTECTION.
Contact City Forester if any pruning is needed prior to work if potential for damage exists.

ZONE 3
TRUNK PROTECTION.
Required if construction equipment involved within ten feet or less (permitted inside the CRZ only if equipment is operated exclusively on existing hardscape and no soil compaction takes place).

ZONE 1
ROOT PROTECTION.
Extends through entire tree protection area.

Any digging, excavating, trenching, changing of grade, or other actions that may potentially impact the rooting environment must be authorized by the City Forester prior to work commencement. Work within the CRZ must take place in accordance with the conditions established by the City Forester.

NOTES
Fencing Height must be at least 48."

Attach "Tree Protection Area" Signs (template available from City Forester) to Fencing every 50 feet.

The Tree Protection Area shall not be modified or removed prior to consent of the City Forester.

Materials, debris, equipment, and site amenities shall not be stored within the Tree Protection Area.

Entrance to the Tree Protection Area is not permitted without consent of the City Forester.

Tree Protection Detail – Individual Tree
NOT TO SCALE