

CITY OF VANCOUVER  
WASHINGTON

# Street Tree Manual

Arboriculture Specifications and Standards of Practice



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## Chapter 1 – Purpose and Scope of the Street Tree Manual

The Street Tree Manual (“Manual”) contains specific regulatory provisions, promulgated by the City Forester pursuant to Vancouver Municipal Code (“VMC”) § 12.04.030. VMC § 12.04.030 allows the City Forester to quickly implement best management practices, as reflected in the professional tree care industry, for the planting, maintenance, and removal of street trees.

The Manual supplements VMC Chapter 12.04, Street Trees. Therefore, individuals must be familiar with the requirements from both VMC Chapter 12.04 and the Manual. VMC Chapter 12.04 governs any conflict between VMC Chapter 12.04 and the Manual.

## Chapter 2 - Definitions.

**“ANSI A300 standards”** Industry developed standards of practice for tree care; acronym for American National Standards Institute

**“ANSI Z133.1”** safety standards for tree care operations

**“Arboriculture”** refers to that part of horticulture which deals with the study and care of trees and other woody plants.

**“Backfill”** soil put back into the hole when planting a tree

**“Balled and burlapped (B & B)”** having the root system and soil wrapped in burlap for moving and planting a tree or other plant

**“Bare root”** tree or other plant taken from the nursery with exposed root system, without soil

**“Bottoming”** excessive removal of the lower branches

**“Bracing”** installation of metal rods through weak sections or portions of a tree for added support

**“Branch bark ridge”** top area of a tree’s crotch where the growth and development of the two adjoining limbs push the bark into a ridge

**“Branch collar”** area where a branch joins another branch or trunk created by overlapping wood tissues

**“Cabling”** installation of hardware in a tree to help support weak branches or crotches

**“Caliper”** trunk diameter measured at six inches from the ground; if caliper is greater than 4 inches the measurement is taken at 12 inches from the ground.

**“Central leader”** the main stem of a tree

**“City”** means the incorporated City of Vancouver, Clark County, Washington.

**“City Forester”** means the City's Urban Forester, or designee.

**“Codominate branches/stems”** forked branches of nearly the same size in diameter and lacking a normal branch union (or containing a branch union with included bark).

**“Crown”** the aboveground portions of a tree.

**“Crown cleaning”** removal of watersprouts and dead, dying, diseased, crossing and high-risk branches from a tree.

**“Crown raising”** removal of the lower branches of a tree in order to provide clearance for buildings, vehicles and pedestrians.

**“Crown reduction”** pruning to reduce the height and/or spread of a tree by cutting to a lateral branch or limb at least one-half the diameter of the cut being made.

**“Crown restoration”** a method of restoring the natural growth habit of a tree that has been topped or damaged in any other way.

**“Crown thinning”** selective removal of laterals from branches and limbs to provide light and air movement through the crown or to lighten the weight of the remaining branches.

**“Cultural”** sunlight; water; fertilizer; air; pest infestations; or other factors resulting in poor tree growth.

**“Deadwooding”** removal of dead and dying limbs from a tree.

**“Decay”** decomposition of woody tissues by fungi or bacteria.

**“Dieback”** condition in which the ends of the branches are dying.

**“Director”** means the City's Director of Public Works, or designee.

**“Drip line”** means that area on the ground below the tree in which the boundary is designated by the edge of the tree's branches.

**“Drop-crotch pruning”** see crown reduction

**“Easement”** means a grant of one or more property rights by the property owner, for a specific purpose, to the public, a corporation, or another person or entity.

**“Emergency”** means damage to utility systems, or to public or private property or an immediate threat to the welfare of persons, due to storm or other acts of God or other accident which requires immediate attention to alleviate the condition or commence or complete repairs.

**“Heading back”** topping; cutting of limbs back to buds, stubs or lateral branches not large enough to assume apical dominance.

**“Hazard tree”** means any tree or tree part that with a combination of structural defect and/or disease which makes it subject to a high probability of failure, and a proximity to persons or property, as assessed by the City Forester. Hazard tree evaluation standards are established by the International Society of Arboriculture and are used by the City to determine this designation.

**“Included bark”** bark that becomes embedded in a crotch between branch and trunk or between codominant stems and causes a weak structure.

**“Internode”** the region of the stem between two successive nodes.

**“Inappropriate Species”** are the types and species of trees that are in the Street Tree Ordinance as prohibited trees or are determined as such by the City Forester.

**“Knowingly”** means that a person knows or acts knowingly or with knowledge when he or she is aware of a fact, circumstance or result which is described by this Chapter as being a violation, whether or not the person is aware that the fact, circumstance or result is a violation of this Chapter.

**“Leader”** the primary terminal shoot or trunk of a tree.

**“Lion tailing”** the poor pruning practice in which the limbs are thinned from the inside of the crown to a clump of terminal foliage.

**“Major pruning”** means the pruning or cutting out of branches three inches in diameter or greater; root pruning; or cutting out of branches and limbs constituting greater than fifteen percent of the tree’s foliage bearing area, and in which the natural form of the tree is retained.

**“Mature Tree”** when a tree has achieved 75% of its full canopy growth or trees that are over 15 years of age.

**“Minor pruning”** means pruning or cutting out of water sprouts, suckers, twigs, or branches less than three inches in diameter, or which constitutes less than fifteen percent of the tree’s foliage bearing area and retains the natural form of the tree. Removal of dead wood, broken branches and stubs are also considered minor pruning.

**“National arborist organization”** means nationally recognized arborist associations including International Society of Arboriculture and American National Standards Institute.

**“Node”** the slightly enlarged portion of a stem where leaves and buds arise.

**“Nuisance vegetation”** means trees, plants, shrubs or vegetation which is in the right-of-way or private property and situated so that they interfere with the free and safe use of any street or sidewalk and is declared a public nuisance. Any vegetation which interferes with vision at any intersection so as to violate Section 20.985 of this Code is also nuisance vegetation and a public nuisance.

**“Occupational Safety and Health Act (OSHA)”** the United States legislative act dealing with health and safety in the work place.

**“Permit holder”** means that person who is issued a street tree work permit under this Chapter.

**“Person”** includes any individual, firm, association, corporation, agency, or organization of any kind.

**“Planting”** means necessary steps taken during installation of trees and shrubs within the public right of way to ensure survival.

**“Planting strip”** means that area from the back of curb and the front of sidewalk or the area in the raised median, used for grass or approved landscaping plants.

**“Private tree”** means a tree in which the trunk wholly resides on a property owner’s real property adjacent to the right-of-way.

**“Property owner”** means a person or agent thereof, who owns or controls real property adjacent and within a right-of-way.

**“Pruning”** cutting away unwanted parts of a plant.

**“Public place”** means property owned in fee by the City of Vancouver.

**“Public utility”** means any organization that has a franchise to utilize the public rights-of-way.

**“Raising (Elevating)”** the removal of lower limbs from a tree to provide clearance.

**“Reduction”** pruning to decrease height and /or spread of a branch or crown.

**“Removal”** means the act of taking out or reducing a part or an entire tree or shrub so that the tree or shrub will not regain its mature size or function.

**“Restoration”** pruning to improve the structure, form and appearance of trees that have been severely headed, vandalized, topped or damaged.

**“Right-of-way”** means property designated for general public access, typically including but not limited to planting strip, street tree, sidewalk, curb, and street.

**“Shall”** designates a mandatory requirement within the ANSI standards and this Manual.

**“Scaffold branches”** the permanent or structural branches of a tree.

**“Should”** designates an advisory recommendation in the ANSI standards and this Manual.

**“Sidewalk”** means a facility made of concrete or other approved material for the conveyance of pedestrians usually adjacent to a street, or between streets.

**“Species”** a group of organisms composed of individuals of the same genus.

**“Staking”** supporting a newly planted tree or leaning tree with stakes.

**“Stress”** factors that negatively affects the growth and health of a tree.

**“Structural defects”** flaws, decay or other faults in the trunk, branches, or root collar or a tree that may lead to failure of the tree.

**“Structural pruning”** pruning to establish a strong scaffold branch system.

**“Street”** means a public way designed primarily for vehicular traffic. It includes the terms “road”, “highway”, “avenue”, “boulevard”, “thoroughfare”, or other traffic way and usually includes improvements, including curbs, sidewalks and street pavement within the right-of-way.

**“Street tree”** means any woody vegetation, generally single-stemmed, and is recognized by the City as a tree, and in which the trunk is wholly or partially located within the right-of-way or any easement granted for the purpose of public tree management.

**“Street Tree Manual”** means the Tree Specifications and Standards of Practice for the City of Vancouver which contains regulations and standards for the planting, pruning, removal and maintenance of trees on public right of way and a program for developing and improving the public tree resources of the community.

**“Subordinate”** pruning to reduce the size and growth of a branch in relation to other branches or leaders.

**“Sucker”** shoot arising from the roots.

**“Supervise”** means a person who has obtained certification from the International Society for Arboriculture and who ensures that his or her employees engage in work that is in reasonable compliance with standards contained in the Street Tree Manual.

**“Thinning cut”** removes a branch at its point of attachment.

**“Topping”** cutting back a tree to buds, stubs or laterals not large enough to assume the role of leader.

**“Undercut”** a cut on the underside of a limb to be removed to prevent tearing as the limb falls.

**“Urban Forestry”** has as its objective the cultivation and management of trees and related plants for their present and potential contribution to the physiological, sociological and economic well being of urban society. Inherent in this function is a comprehensive program designed to educate the urban populace on the role of trees and related plants in the urban environment. In its broadest sense, urban forestry is one essential component of a multi-managerial system that includes watersheds within the City, wildlife habitats, outdoor recreation opportunities, landscape design, recycling of municipal vegetative wastes and tree care in general.

### **Chapter 3 – Street Tree Work Permit and Street Tree Worker License.**

**Permits.** Any individual who seek to obtain a street tree work permit for planting, pruning or removal of any street tree or a street tree worker license is located in APPENDIX C of this Manual or may obtain an application at the following address:

Online: [www.cityofvancouver.us/urbanforestry](http://www.cityofvancouver.us/urbanforestry)

Request by email: [urbanforestry@cityvancouver.us](mailto:urbanforestry@cityvancouver.us)

Request by phone: (360) 487-8328

Request in person: Esther Short Building, 610 Esther St

### **Chapter 4 - Tree Selection**

A beautiful, well-maintained tree adds environmental, economic and social value to the community. Trees are critical to the urban infrastructure. They provide shade, energy conservation, road conservation, prevent erosion, mitigate damage from stormwater, clean the air and water, help block wind, and they provide habitat for urban wildlife.

Planting the right tree in the right place is an investment in the future. Choosing the right tree and the best place to plant will help provide beautiful, healthy trees that require less maintenance. The temptation to plant a fast growing tree is great. However, fast-growing trees often develop problems prior to maturity because much of their energy is used in



growth with little left over for defense of pests and diseases. Trees with slow to moderate growth rates are usually healthier, survive longer, and they are able to tolerate attacks from pests and diseases. Good tree selection should also accommodate site use and safety needs.

**A. Appropriate Species (by planter width size). APPENDIX A**

1. Street Tree Selection List
2. Factors to consider when selecting the right tree for the right place include:
  - a. Mature height, width and shape of the tree
  - b. Visibility and clearance near driveways, intersections, traffic signs and signals
  - c. Future conflicts with overhead (**Trees with height of more than 25’ at maturity shall not be planted under, or adjacent to overhead utility lines**) and underground utility lines (at least 5 feet from underground utility lines)
  - d. Soil space for roots to avoid conflicts with sidewalks, driveways, streets, curbs, sewer and septic systems
  - e. Soil type, soil conditions and other site constraints
  - f. Cultural requirements of the tree-hardiness, light, soil and water requirements
  - g. Susceptibility to disease or insect pests

**B. Replacement Tree Size.** Planting Strip for:

1. 4’ planting strip- 1.5” or larger caliper.
2. 6-8’ planting strip- 2” or larger caliper.

**C. Replacement Tree Quality.**

Replacement trees shall meet the quality and size standards of this chapter. Replacement trees shall be American Standard for Nursery Stock Grade No. 1 or better.

**D. Prohibited Species**

(Common Name)	(Scientific Name)
Cottonwoods, Aspen, or Poplars	<u>Populus</u> sp.
Willows	<u>Salix</u> sp.
Silver Maple	<u>Acer saccharinum</u>
Tree of Heaven	<u>Ailanthus altissima</u>
Boxelder	<u>Acer negundo</u>
Black Locust	<u>Robinia pseudoacacia</u>

## Chapter 5- Planting Standards

**A. Objective.** Street trees shall be planted to provide for the eventual mature size of the trees.

**B. Equipment.** All equipment to be used and all work to be performed must be in full compliance with the most current revision of the American National Standards Institute Standard Z-133.1 and A300 or as amended.

**C. Planting locations.** Trees shall not be planted closer than:

1. Twenty-five (25) feet from the curb line of an intersection; lower tree branches should be shortened or removed to provide physical and visual clearance.
2. Five (5) feet from alley margins and driveways.
3. Five (5) feet from fire hydrants, underground utilities, water meters, and utility boxes or poles.
4. Ten (10) feet from directional traffic signs.
5. Two (2) feet from property lines.
6. Twenty (20) feet from stop or yield signs.
7. Twenty (20) feet from street lights. If a columnar variety is selected, the distance can be reduced, but species selection shall be determined by the City Forester.
8. Twenty-five (25) feet from adjacent trees depending on species.
9. Ten (10) feet from storm drains
10. Three (3) feet behind curb or sidewalk if no planter strip exists (attached sidewalks or just curb).
11. Trees with height of more than twenty-five (25) feet at maturity shall not be planted under, or adjacent to overhead utility lines

**D. New Street Trees.** New street trees shall not be less than 1.50 inches in diameter, measured at six inches above the ground. The City Forester shall authorize variances in size. Plant material shall conform with and meet American Standard for Nursery Stock, ANSI Z60.1-1996 or as amended and the Standardized Plant Names adopted by the American Joint Committee on Horticulture Nomenclature. Plant material may be balled and burlapped, containerized or bare root.

**E. Handling standards.** Street trees should be handled and planted according to the specifications contained in this subsection.

[2. Applicable specifications and standards. *Principles and Practices of Planting Trees and Shrubs*. 1997. International Society of Arboriculture, P.O. Box 3129, Champaign, IL 61826-3129.

*American Standard for Nursery Stock*. 1996. American Association of Nurseryman, Inc. 1250 I Street. N.C. Suite 500, Washington, D.C. 20005.

*Standardized Plant Names*. 1942. American Joint Committee on Horticulture Nomenclature, Horace McFarland Company, Harrisburg, PA]

1. Transportation, storage and handling of plant material. Individuals should take all precautions customary in good trade practice in preparing plants for moving, including, but not limited to the following:
  - a. Dig, pack, transport, and handle plants with care to ensure protection against injury.
  - b. Protect all plants from drying out.
  - c. Plants, once removed from the holding medium, must be planted immediately.
  - d. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches.
  - e. Plants should be lifted and handled with suitable support of the soil ball to avoid damage.
  - f. Cover plants transported on open vehicles with a protective covering to prevent wind burn.
2. Concrete cuts. Concrete cuts for tree planting shall be at least 4' x 6' or 6' x 9' or larger depending on the space constraints and the mature size of the tree, to allow for air and water into the root area.
3. Adjacent surfaces. Space between the tree and the hard surface may be covered by a nonpermanent hard surface such as bricks on sand, paved blocks and cobblestones; and mulch.
4. Accessories and soil amendments.
  - a. Bark mulch. Bark mulch, such as hemlock or fir bark, shredded medium grind size, free from noxious weed seed, debris, and all foreign material, may be applied at a three (3") inch depth in a four (4") foot diameter circle or to curb around tree. Mulch must stay two (2") to six (6") inches away from the trunk of the tree.

- b. Water. Water should be free of substances harmful to plant growth. Water polymers may be used to extend water holding capacity in dry sites.
- c. Organic matter. Native soil may be amended by spreading two (2") to four (4") inches of organic matter (bark, sawdust, compost) over the area to be planted. The organic matter should then be worked into the soil to a depth of six (6") or more inches. The deeper the organic matter is incorporated, the deeper will be root development especially in poor and compacted soils.

**F. Planting Operations**. Streets trees should be planted according to the following specifications (Fig. 1. New tree planting):

1. Work Area. During planting, areas being landscaped should be kept clean. Water, mud, dirt, trash, papers, cans, and other materials are to be kept off turf, walks, driveways and streets so as not to impede normal traffic, use of area and to prevent water from reaching storm drains. Cleaning should be performed during installation of the street trees and upon completion of the work. All excess materials, soil, debris and equipment should be removed from the site upon completion of work. Damage, if any, to adjacent areas must be repaired.
2. Excavation. Excavate the planting hole three (3) to five (5) times wider than the diameter of the root ball. If the soil is compacted, the hole should be five (5) times the width of the root ball. The hole must be wider at the top than at the bottom, with shallow, sloped walls. The planting hole should not be deeper than the root ball, and the bottom of the hole should be undisturbed soil so that the soil will give solid support to the bottom of the root ball. The top of the root collar should be level with the existing finish grade at the planting site. Plants should not be planted deeper than they were at their former location.
3. Plant Protection. Plants should be protected at all times during planting operations to prevent roots from drying out. No planting is to be done during freezing weather or other highly unfavorable planting conditions. The root system should be kept moist until planting. This is accomplished by soaking the roots in water for one (1) to two (2) hours, but for NO MORE THAN SIX (6) hours; by wrapping them in moist burlap; or by temporarily planting (heeling in) to planting depth in moist sawdust, bark or soil. Hold plants in the shade prior to planting.
4. Setting the plants in the hole. Before planting a bare root street tree, prune back any badly bruised, broken, girdling or jagged roots to sound wood with a clean cut. Dig the planting hole deep enough so the plant, when set in the hole, will be at the level it was in the nursery, or preferably, one (1") to two (2") inches higher a mound of soil at the center of the planting hole is used to achieve this. The hole large enough to accommodate the root system. The diameter of the hole should allow spreading the roots without crowding or bending them. If branches were

- tied in at the nursery they must be released prior to final orientation in the planting hole to achieve the best landscape affect.
5. Special setting instructions for balled and burlapped trees: If a street tree is balled and burlapped prior to planting, one should comply with the following instructions:
    - a. Setting the plants in the hole. A balled and burlapped plant should be positioned so that its weight keeps the tree in a perpendicular position before backfill is added. Plants should be transferred directly from the storage site to the planting hole. If branches were tied in at the nursery they must be released prior to final orientation in the planting hole to achieve the best landscape affect.
    - b. Remove wire baskets. After the root ball is oriented in the hole, balled and burlapped trees in wire baskets shall have the upper two-thirds of the wire basket cut and removed from the ball.
    - c. Remove burlap. After the root ball is in the hole, the burlap should be removed from the top and sides of the ball but not from beneath the ball. If removal of the burlap will result in the soil crumbling, the burlap should be rolled back only from the top and slit along the sides with a sharp knife. If natural burlap is not used, the burlap will have to be removed entirely at planting. All non-biodegradable twine or ropes tied around the trunk of the tree or the root ball must be removed. Natural fiber ties, if tied around the trunk, shall be removed.
  6. Backfill and Water. Backfill should be native topsoil, reasonably free of roots, rocks, subsoil, debris, large weeds, and foreign matter. The backfill should be worked around and beneath the ball so no air pockets remain. Firm the soil near the base of the root ball so that the tree is vertical and adequately supported, but do not pack the soil. The addition of soil alternating with tamping should continue until the hole is half full. Water is then added to partially fill the hole. After the water has soaked into the soil, backfill with soil should be completed and a water collection basin raked around the hole to facilitate watering later. Water is then added following final backfilling.
  7. Basin construction. Construct around the perimeter of each root ball a shallow rain basin consisting of a ridge or berm of earth three (3") to four (4") inches high and slightly larger than the outside diameter of the root ball, so that water drains away from the trunk, but not away from the root system.
  8. Mulching. Mulch tree planting pits and shrub beds with bark mulching material three (3") to six (6") inches deep immediately after planting. Keep the mulch at least two (2") inches away from the trunks to prevent trunk decay. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

9. Initial pruning. The tree should be pruned to eliminate branches that are damaged, diseased, or that interfere with the natural structure in the tree. No healthy branch shall be removed unless one or more of the above criteria are met. Pruning cuts shall be made in compliance with International Society of Arboriculture pruning standards. No application of wound dressings shall occur.

**G. Future Maintenance.** The adjacent property owner shall assume the following maintenance responsibilities after the planting of a street tree.

1. Watering. The permit holder shall water thoroughly at the time of installation, as required, to maintain vigorous and healthy tree growth. The permit holder shall continue to water the tree during the next three summers. New trees should receive five (five) to ten (10) gallons of water per week for the first three summers to promote a deep root system. After the first three years, trees should be established and irrigation is no longer needed.
2. Staking. This treatment is not a standard treatment and should be used judiciously as in cases of damaged root balls, unless the tree cannot stand by itself or other conditions that have compromised the root balls. If stakes are used, they are to be loose such that they do not interfere with the free movement of the tree and should be 2/3 the height of the tree. Any stakes should be removed after the first growing season.
3. Tree wrap. This treatment is not a standard treatment and should be used with justifiable benefits (such as reduced rodent injury; mechanical injury; sunscald). Any tree wrap should be removed after the first growing season.
4. Mulching. Competing vegetation shall be controlled to the extent necessary to allow establishment, survival, and growth of the planted trees. To ensure that competing vegetation is properly controlled, trees are to have much, four (4) feet in diameter, three (3) to six (6) inches at the base of the tree, keeping the mulch at least two (2) inches away from the trunks to prevent decay.

## Chapter 6 - Pruning Standards

### A. Pruning Specifications and Standards

There are many erroneous terms used by the public in reference to the removal of tree parts. Shaping, trimming, shearing, tipping, topping, rounding over, hedging and flat topping are some of the terms used. These terms do not define pruning or the techniques used to prune plants. These terms represent removal of tree parts that often initiates decay or decline in trees. They are not biologically correct and do not enhance the health of the tree and often shorten the life of the tree.

Pruning is intentionally and permanently injuring a tree to meet a management objective in the landscape. It is a maintenance procedure that is performed to achieve a clear management objective. It is neither random nor performed because it is required every year. These guidelines are presented as working guidelines, recognizing that trees are individually unique in structure, form and growth response—not only between, but also within species and cultivars. The appropriate guidelines should be chosen and/or modified depending on species, age of the tree, time of the year, condition of the tree and the management objective.

## **B. Pruning Permit Process**

Any person (property owners or persons retained to perform the work) to perform work on street trees, must first obtain a Street Tree Work Permit with in the City of Vancouver. Permits are required by commercial licensed tree firms for pruning of any tree within the public right-of-way. The applicant must be a licensed, bonded, insured and an ISA certified arborist in order to obtain a permit. Property owners may perform minor pruning without obtaining a permit. There is no fee for a permit to prune street trees, to request a site visit contact Urban Forestry. All work sites are subject to pre and post inspection of the work site and work procedures.

### 1. Pruning criteria

The City Forester may authorize, deny or order pruning of or may prune trees and shrubs situated within the rights-of-way whenever one of the following criteria is met.

- a. Any tree(s) that because of habit of growth, age, condition or disease becomes a public nuisance or risk to public safety.
- b. Any tree(s) that obstructs a clear view of streets, signs, signals, street lights, intersections or interferes with the safe use of the street or sidewalk.
- c. Any tree(s) that does not meet an eight-foot clearance over sidewalks and a fourteen-foot clearance over streets.
- d. Any tree(s) that is damaging public improvements or public utilities.
- e. Any tree(s) on private property that overhangs the public right-of-way and interferes with established clearance and pruning criteria.

## **C. Pruning Specifications and Standards**

1. All equipment to be used and all pruning shall follow the American National Standard Institute Standard Z-133.1-2006 and A300-2008 and ISA Pruning Guidelines for Shade Trees or as amended.
2. For clearance pruning, remove branches to permit clearance of approximately eight (8) feet on the sidewalk or pedestrian side of tree and approximately fourteen (14) feet on roadside. No more than 25% of the live crown shall be removed at a time.
3. All final cuts shall be made sufficiently close to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub, so that closure can readily begin under normal conditions. For heavier limbs the

three-cut procedure must be performed to prevent bark and trunk damage. Clean cuts shall be made at all times. Excessively deep flush cuts that produce large wounds or weaken the tree at the cut shall not be made. Sharp pruning tools shall be used so that clean cuts will be made at all times. All pruning tools and saws shall be kept sharpened to result in final cuts with smooth wood surface and secure bark remaining intact. All trees six inches or less in diameter shall be pruned with hand and/or hydraulic pruning tools only.

5. It is necessary to use the three step cutting technique on branches that are too heavy to handle to prevent splitting or peeling the bark (Fig.2. Proper Pruning Principles. Three-cut procedure). Where necessary, to prevent tree or property damage, branches shall be lowered to the ground by proper ropes or equipment.
6. On trees known to be diseased, tools are to be disinfected with methyl alcohol at 70% (isopropyl alcohol diluted appropriately with water) or 10 % bleach solution after each cut and between trees where there is known to be a danger of transmitting the disease on tools.
7. Equipment that will damage the bark and cambium layer shall not be used on or in any tree.
8. Climbing spurs shall not be used when climbing trees, except to climb a tree to be removed or to perform an aerial rescue of an injured worker.
9. Ropes shall not come in direct contact with the crotch of the tree when tied into the tree. Friction or cambium savers are to be used when accessing and climbing the tree with rope and saddle. Rope injury from loading heavy limbs should be avoided.
10. Natural or mechanical rigging techniques shall be used to lower all limbs of sufficient size that may cause damage to other trees or surrounding public or private property.
11. No Topping- topping is not acceptable pruning practice. (Fig.3 Proper Pruning vs. Topping Trees)

#### **D. Tree Pruning Specifications.**

The word ‘shall’ indicates a practice is mandatory. The word ‘should’ refers to a practice that is highly recommended. Attention is to be given to develop and preserve tree structure, health and the final appearance of the trees. Appropriate pruning shall be done in order to maintain a tree form typical of the species (cultivar) of the tree being pruned.

##### **1. General Procedures.**

- a. Live branches less than 1.5 inches or greater than 3 inches should not be removed.
- b. Dead branches greater than .5 inches measured at the base of the branch shall be removed from the canopy of all trees.
- c. Remove no more than 25 percent of live foliage from any tree.



## **2. Procedures to Reduce High-risk Conditions in Trees and Improve Structure (Major Pruning).**

- a. Remove all dead, dying and diseased branches.
- b. Reduce the weight of branches or stems with included bark.
- c. Reduce the weight toward the ends of all but one codominant stem.
- d. Thin the outer edge of the canopy. When laterals are thinned from a branch, at least one-half of the foliage on laterals along the inner two-thirds of the branch should be retained. Excessive removal of interior laterals leads to lion's tailing. (Fig. 8. Restoring a lions-tailed tree)
- e. Remove lower branches to permit clearance of approximately eight feet on the sidewalk or pedestrian area and fourteen feet on the street side. In lifting the bottom branches of trees for clearance, care should be given to the final appearance of the entire crown. The tree should have at least one-half of its foliage on branches that originate in the lower two-thirds of its crown to ensure a well-formed, tapered structure and to uniformly distribute stress within the tree. Excessive removal or 'bottoming' of the tree is prohibited. (Fig. 4. Raising the canopy)
- f. Correct all interior or interfering branches, and one of all crossed or rubbing branches where practical so the removal thereof will not leave large holes in the general form of the tree. Excessive removal of interior branches as to cause a 'lion's tailing effect' is prohibited. (Fig. 8. Restoring a lions-tailed tree)

## **3. Specific Procedures for Mature Trees (Major Pruning).**

- a. The weight on main scaffold limbs with included bark shall be reduced by approximately one-third by removing some secondary branches toward the ends of the limbs and/or by removing the end of the branch using a reduction cut. (Fig. 5. Reduction Cut)
- b. If a tree divides into two or more codominant leaders of about equal size in the bottom two-thirds of the tree, reduce the end weight by approximately one-third using reduction and thinning cuts on all stems but the one you believe could become the strongest and most dominant leader. To accomplish this, remove the main portion of the codominant leaders growing upright or toward the center and leave those that are oriented outward. Use mostly thinning cuts, not drop-crotch cuts, on larger branches and trees. (Note: On some trees, you may not be able to perform all of this because you can not remove more than 20 percent of the foliage. Make a note of this tree and report to the City Forester.)

- c. Identify those trees that have included bark in the crotches between codominant stems. Make a note of these on the inventory list. The City Forester or designee will evaluate these trees for possible cabling, pruning or other treatments. Identify limbs and trunks with vertical cracks or other potentially hazardous conditions. The presence of any structural problem, disease, insect pest or decay should be reported in writing to the City Forester.
- d. If less than 25 percent of the live foliage was removed on a mature tree following procedures 1 and 2 above, thin the canopy to allow more light to reach the ground under the tree and to help reduce damage from storms. The foliage removed shall be taken from the outer edge of the canopy, not from the interior. Interior branches shall be left on the tree.
- e. Crowns of trees that were storm damaged or topped will be restored to improve structure and form. Remove or shorten all sprouts except one, which will become the dominant stem at that point. Thirty percent of the foliage may be removed when performing this work.

#### **4. Specific Procedures for Young Trees (Minor Pruning)**

The primary purpose of pruning young trees is to improve the trunk and branch structure. Properly trained young trees will develop into structurally strong mature trees. The greatest structural concern in young trees is the establishment of a central leader and the reduction of codominant trunks or main leaders. Reducing one of the codominant branches is highly recommended if possible. If removal is required, it should be accomplished over several pruning cycles.

- a. The subordination or removal of one side of a codominant leader or stem, due to the recognized potential risk associated with codominant leaders, is the primary objective. (Fig. 6. Maintaining a dominant leader) Branches, trunks or leaders not considered the main leader, two inches diameter or larger should be subordinated or removed. **The main leader shall not be subordinated or removed.** Codominant leaders are considered to be two or more branches, trunks or leaders of approximately the same size, originating in proximity to one another. If there is no stem considerably larger than others, subordinate all but one stem. Where there is included bark as part of the condition, preference should be given to the removal of one side, but only if such removal will not remove more than twenty percent of the canopy or destroy the aesthetic value of the canopy.
- b. Some branches on young trees are considered temporary branches. These are branches that may be removed over time depending on the species, site use and management objectives. Temporary branches should remain on the tree as long as possible if they are not a structural problem. Selective removal should occur over several pruning cycles and no more than twenty percent of the live crown shall be removed in any one pruning cycle.

c. Canopy raising should shorten branches over paved areas with a reduction cut back to a living side branch at least one-third the diameter of the removed portion to allow approximately eight feet of clearance for pedestrians and vehicles. Removal of the branch may be necessary, but preference shall be given to shortening of branches instead of removing, especially if the branch diameter is more than half the trunk diameter. When pruning is completed, approximately one-half of the live crown should originate from branches on the lower two-thirds of the tree. (Fig. 4. Raising the canopy)

d. Crown cleaning is the removal of dead, dying diseased, damaged, crowded, broken, weakly attached, low vigor branches, out-of-place branches and perhaps some water sprouts from a tree crown. Crown cleaning is **not** stripping out the interior canopy leaving only live foliage at the end of the branches. It will not be necessary to make cuts smaller than one inch in diameter, other than where branches may be shortened to accommodate clearance beneath the canopy. Canopy cleaning is to include the following:

- 1) If two limbs are crossing or touch each other, shorten or remove one of them so they no longer cross or touch.
- 2) If two limbs originate within twelve inches of each other on the trunk, shorten or remove one of them.
- 3) Remove dead or broken limbs one-half inch in diameter or larger.
- 4) Directional prune to establish a minimum of three feet or as practical of clearance from buildings, lights and other structures.

## **5. Restoration Pruning (Major Pruning)**

Crown restoration is intended to improve the structure of trees that have been broken, topped or severely pruned using heading cuts. Many sprouts form from the cut ends of topped or broken trees. Some sprouts also develop below the cuts. They are poorly attached to the tree and can break easily. Crown restoration may require several pruning cycles over a number of years. (Fig.7. Crown restoration of a topped tree)

### Objective

The objective is to develop one sprout into the main stem and one as a branch no more than about half the diameter of the stem. The size range of parts to be removed, the location in the canopy and the percentage of sprouts to be removed will vary depending on the severity of the damage and the health and vigor of the tree.

### Specific Procedures

One to four sprouts, on the main branch stubs, should be selected to form a natural appearing crown. The more vigorous sprouts may need to be thinned, cut to a lateral, or even headed, to control growth. Begin by removing some sprouts completely and shortening others using reduction cuts. Removing too many sprouts at one time can stress the tree and cause additional sprouting. This leaves one sprout to become the main stem

and several to remain as branches. One sprout of moderate vigor is left to become the main stem. The remaining sprouts will be shortened again in the next few years.

## **Chapter 7 - Removal Standards**

### **A. Street Tree Removal Specifications and Standards**

1. The tree removal shall consist of cutting down each tree in a safe manner to a point four inches above the adjacent ground level. The permit holder shall remove all tree limbs and tree trunks from the site in accordance with regulations of the City, County and State. Logs and chips if requested are to be left on private property.
2. The permit holder shall refrain from the practice of directional felling the trees. All trees shall be limbed out prior to the final cutting of the trunk. Sidewalks, curbs, streets and manhole structures shall always be protected from the impact of falling wood by use of the tree or limb ground supports. Ropes or other mechanical devices shall be used to lower all limbs of sufficient size that may cause damage to other trees or surrounding public or private property.
3. Limbs and trunks temporarily placed in the right of way shall be placed in such a manner as to eliminate any obstruction to motor vehicles and pedestrians. Brush and limbs overhanging a curb or pavement shall not be acceptable and under no circumstances shall these materials be allowed to lie in the right of way overnight.
4. All infectious diseased or parts of dead trees possibly harboring vectors of infectious diseases shall be removed from the City of Vancouver and shall become the permit holders responsibility to ensure destruction of the diseased or dead wood in accordance with the State statues and local ordinances. Under No circumstances shall logs from infectious diseased trees be left on site.

### **B. Street Tree Removal Criteria**

Street tree removal permit will be granted when the adjacent property owner has sufficiently demonstrated that the continuing presence of the tree outweighs the public benefit provided by the tree. Trees that are determined to be dead, “hazards” or “inappropriate species” as designated by the City are automatic candidates for removal.

1. The following factors **shall not** be considered as criteria for removal of a street tree:
  - a. Obstruction of view
  - b. Potential future costs to public infrastructure or private property which can be avoided by root pruning and root barriers
  - c. The cost of routine tree maintenance (pruning, watering, fertilizing, spraying, if necessary)
  - d. Normal maintenance activities such as the raking of leaves and flowers and annual cleaning of gutters
  - e. Hazards that can be controlled or eliminated through appropriate pruning or maintenance

### **C. Procedure for removal of trees and shrubs in right of way**

The adjacent property owner shall submit a complete Street Tree Permit Application (APPENDIX C) to the City Forester's Office:

Online: [www.cityofvancouver.us/urbanforestry](http://www.cityofvancouver.us/urbanforestry)

By email: [urbanforestry@cityvancouver.us](mailto:urbanforestry@cityvancouver.us)

By Fax: (360) 487-8305

By Mail: Vancouver Urban Forestry Division, P.O. Box 1995 Vancouver, WA 98668

In person: City Hall, permit counter, 415 W 6<sup>th</sup> St Vancouver, WA 98668

Upon approval of the removal, the applicant shall obtain the street tree removal permit at City Hall permit counter, 415 W 6<sup>th</sup> Street for a fee of \$5 (per address, per request). The permit is valid for 90 days and the applicant should notify the City Forester's Office upon completion of work.

### **D. Stump Grinding Specifications**

The stumps and roots of trees or shrubs shall be removed to a point at least one foot below the top of the adjacent curb or proposed curb grade, treating the remaining roots with a suitable compound to prevent future sprouting or growth. All areas where stumps have been removed, and areas disturbed by the removal operations, shall be backfilled to the same level of adjoining grade with pulverized topsoil and seeded the same day grinding are removed otherwise the site shall be properly barricaded overnight to ensure the safety of the public. Any roots which have disrupted or broken the adjacent street, curb or sidewalk shall be removed and said street, sidewalk, or curb shall be repaired.

#### **1. Removal of stump grindings and debris.**

Within twenty-four hours after grinding (removal) of a tree stump and buttress roots, the permit holder shall remove all stump grindings and associated debris from the site. Grinding debris generated by stump removal work shall be the responsibility of the permit holder. Stumps, grindings and debris shall be placed away from the curb and gutter, street and sidewalk immediately to eliminate hazards to the motoring public and pedestrians and to eliminate damage to public property.

#### **2. Backfilling.**

All areas where stumps have been removed and areas disturbed by the removal operations shall be backfilled to the level of adjoining grade with pulverized topsoil the same day grindings are removed, otherwise the site shall be properly barricaded overnight to ensure the safety of the public. All holes must be filled with topsoil by the second day. The permit holders shall supply their own topsoil. The topsoil shall be properly leveled and compacted so as to ensure a minimum amount of settlement of the backfill material. If there is more than a one-day delay between the time of removal of grindings and refilling with soil, the disturbed areas shall be barricaded off for public safety and the City Forester notified. Stump grindings and debris shall not be used as backfill material. Topsoil: native; free of roots, rocks, subsoil, debris, large weeds, and foreign matter; acidity range (pH) of 6.5 to 7.0.

### 3. Seeding.

All adjacent disturbed areas and areas where backfill material was installed shall be seeded. The seed shall be of lawn mixture composed of 70% Perennial Ryegrass and 30% Fescue.

## **Chapter 8 – Safety Standards**

1. All equipment to be used and all work to be performed must be in full compliance with the most current revision of the American National Standards Institute Standard Z-133.1-2006 (or as amended) and the Occupational Safety and Hazard Administration's Landscape and Horticultural Services Standards.
2. The Person shall provide personal protective equipment (head, face, eye, respiratory, clothing, footwear and chain saw-resistant leg protection) where there is reasonable probability of injury or illness that can be prevented.
3. The Person shall provide adequate barricades, flagmen, signs and/or warning devices during the performance to protect the motorists and pedestrians. All placements of cones, signs and barricades must conform to the American Traffic Safety Standards and any additional State requirements.

## **Chapter 9 - Traffic Control**

All work that may have impact on traffic operations and pedestrian, bike, or vehicle movement on public right of way should prepare and submit Traffic Control Plans to the City of Vancouver, Transportation Division for review before work begins. Contact 487-7800 for more information.

The permit holder shall provide adequate barricades, certified flagperson(s), signs and/or warning devices during the performance of the tree removal to protect tree workers, motorists and pedestrians. All placements of cones, signs and barricades must conform to the American Traffic Safety Standards. Yellow flashing lights mounted on a vehicle shall not be deemed as sufficient or adequate protection.

## **Chapter 10 - Damage to Property**

The permit holder shall take all necessary precautions to eliminate damage to adjacent trees and shrubs, lawns, curbs, walks or other real or personal property. Ropes or other mechanical devices shall be used to lower all limbs of sufficient size that may cause damage to other trees or surrounding public or private property. Any damage to property, as the result of the permit holder's operations shall be the responsibility of the permit holder. Should the damage not be rectified within the time agreed upon or to the satisfaction of the City Forester or representative, the City reserves the right to repair or replace that which was damaged caused by the permit holder. The permit holder shall

inform the City Forester of representative of any damage caused by the permit holder's operation on the day such damage occurs.

## **Chapter 11 - Protection of Utilities**

Pruning, planting and removal operations may be conducted in areas where overhead electric, telephone, and cable television facilities exist as well as underground water, sewer, telephone, cable, and gas utilities. For the underground utilities, the permit holder must ensure that all lines are located prior to any digging or stump removal (call before you dig (360) 696-4848). The permit holder shall protect utilities from damage, shall immediately contact the appropriate utility if damage should occur, and shall be responsible for all claims for damage due to this operation. The permit holder shall make arrangements with the overhead utility for removal of all necessary limbs and branches, which may conflict with or create a hazard in conducting the operations of the permit. If the permit holder has properly contacted the utility in sufficient time to arrange for the required work by the utility, delays encountered by the permit holder in waiting for the utility to complete its work shall not be the responsibility of the permit holder.

## **Chapter 12 - Site Clean Up**

**A.** The permit holder shall clean up the site and remove debris immediately upon completion of the project. Site cleanup shall include removal of sawdust, small twigs, chips, leaves, trunks and limbs from the street, curb, parkway, sidewalk, private lawns and driveways with appropriate tools for the job. The permit holder is responsible for the proper disposal of all debris from the job site. The site shall be returned to the same state it existed in prior to the removal.

**B.** Disposal of all logs, limbs, chips and debris generated by work shall be the responsibility of the permit holder. The permit holder shall remove all tree limbs and tree debris from the site and dispose of these limbs and debris in accordance with applicable ordinances and regulations of City, County and State. If residents request logs, these shall be left on private property and not in the right of way. If residents request chips, these too will be left on private property.

1. Limbs and trunks temporarily placed in the right of way shall be placed in such a manner as to eliminate any obstruction to motor vehicles and pedestrians. Brush and limbs overhanging a curb or pavement shall not be acceptable and under no circumstances shall these materials be allowed to lay on the right of way overnight.

2. All infectious diseased trees or parts of dead trees possibly harboring vectors of infectious diseases shall be removed and it shall become the permit holder's responsibility to ensure destruction of the diseased or dead wood in accordance with the State statutes and local ordinances. Under NO circumstances shall logs from infectious

diseased trees be left for homeowners. An example of an infectious disease is Dutch elm disease. Asian long-horned beetle and Emerald Ash borers are examples of an insect pest.

## **Chapter 13 - Other Maintenance Specifications and Standards**

### **A. Maintenance Criteria**

#### **1. Fertilization**

Tree fertilization shall be done in accordance with ANSI A300 (Part 2)-2004 standards and specifications.

#### **2. Pesticide Applications (Herbicides, insecticides, fungicides, poisons...)**

This refers to the use of any pesticide regardless of its purpose. Pesticides should not be applied where there is a chance of polluting waterways such as lakes, creeks, rivers or catch basins. Always follow the MSDS and product label for application, storage, and disposal of pesticides.

#### **3. Staking, cabling and bracing**

The installation of cabling and bracing tree support systems is a specialized practice in the field of arboriculture. Proper training and field experience are necessary to perform these treatments successfully and without damaging the tree. These treatments shall be done in accordance with ANSI A300 (Part 3)-2000 standards and specifications.

#### **4. Irrigation**

New trees should receive 5-10 gallons of water per week for the first three summers to promote a deep root system. After the first three years, trees should be established and irrigation should be stopped. Continued irrigation would promote lateral surface roots that could potentially damage infrastructure.

## **Chapter 14 - City Maintenance List (Trees)**

**A. Street Trees** A focus of the urban forestry program is to advocate for the establishment and retention of adequate planting spaces while considering the community desire for urban aesthetics. Large trees with overhanging canopies of branches are especially desirable. Streets with a cathedral of trees overhead provide many benefits; they provide a traffic calming effect, extend the life of roads, provide a separation between streets and sidewalks, reduce pollution, noise, erosion and wind and cool our community.

Planting strips vary greatly in size. Street trees with large canopies require space to grow in order to provide benefits to the community. Wide planting strips are important, if we want large street trees to reach maturity without damaging sidewalks, curbs and streets. Street system design should provide sufficient space to accommodate large trees.



The principles set forth in the Street Tree Manual shall be applied to all street trees in the City of Vancouver. The City Maintenance list includes:

1. Maintain all street trees adjacent to City owned properties.
2. Maintain all street trees within publicly owned medians or curb to curb.
3. Major arterials where there is not an adjacent property owner
4. Downtown Core Area-Columbus Day Storm Trees  
Historic perspective. In 1962 Vancouver was hit by a devastating storm that damaged the majority of downtown trees. The City with partners decided to re-tree the downtown core to revitalize the downtown core business district. This downtown core business district has historically been maintained by the City.

## **Chapter 15 - Tree Preservation During Construction and Development**

Prior to initiating tree removal on the site, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities pursuant to the following standards:

### **A. Placing Materials Near Trees.**

No person may conduct any activity within the protected area of any tree designated to remain, including, but not limited to, parking equipment, placing solvents, storing building material and soil deposits, dumping concrete washout and locating burn holes.

1. Attachments to Trees- During construction, no person shall attach any object to any tree designated for protection.

### **B. Protective Barrier**

Before development, land clearing, filling or any land alteration for which a Permit is required, the applicant:

1. Shall erect and maintain readily visible protective tree fencing along the outer edge of the dripline and completely surrounding the protected area of all protected trees or groups of trees. Fences shall be constructed of chain link and at least four feet high, unless other type of fencing is authorized by the City Forester.
2. Shall prohibit excavation or compaction of earth or other potentially damaging activities within the barriers.
3. Shall maintain the protective barriers in place until the City Forester authorizes their removal or a final certificate of occupancy is issued, whichever occurs first
4. Shall ensure that any landscaping done in the protected zone subsequent to the removal of the barriers shall be accomplished with light machinery or hand labor.
5. In addition to the above, the City Forester may require the following:
  - a. Cover with mulch to a depth of at least six (6) inches or with plywood or similar material the areas adjoining the critical root zone of a tree in order to protect roots from damage caused by heavy equipment.

- b. Minimize root damage by excavating a two (2) foot deep trench, at edge of critical root zone, to cleanly sever the roots of trees to be retained.
- c. Have corrective pruning performed on protected trees in order to avoid damage from machinery or building activity.
- d. Maintain trees throughout construction period by watering and fertilizing if necessary.

### **C. Grade**

1. The grade shall not be elevated or reduced within the critical root zone of trees to be preserved without the City Forester's authorization. The City Forester may allow coverage of up to one half of the area of the tree's critical root zone with light soils (no clay) to the minimum depth necessary to carry out grading or landscaping plans, if it will not imperil the survival of the tree. Aeration devices may be required to ensure the tree's survival.
2. If the grade adjacent to a preserved tree is raised such that it could slough or erode into the tree's critical root zone, it shall be permanently stabilized to prevent suffocation of the roots.
3. The applicant shall not install an impervious surface within the critical root zone of any tree to be retained without the authorization of the City Forester. The City Forester may require specific construction methods and/or use of aeration devices to ensure the tree's survival and to minimize the potential for root induced damage to the impervious surface.
4. To the greatest extent practical, utility trenches shall be located outside of the critical root zone of trees to be retained. The City Forester may require that utilities be tunneled under the roots of trees to be retained if the City Forester determines that trenching would significantly reduce the chances of the tree's survival.
5. Trees and other vegetation to be retained shall be protected from erosion and sedimentation. Clearing operations shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, shrubs, ground cover and stumps shall be maintained on the individual lots, where feasible. Where not feasible appropriate erosion control practices shall be implemented pursuant to VMC Chapter 14.24 and 14.25.

### **D. Additional Requirements.**

The City Forester may require additional tree protection measures, which are consistent with accepted urban forestry practices.