

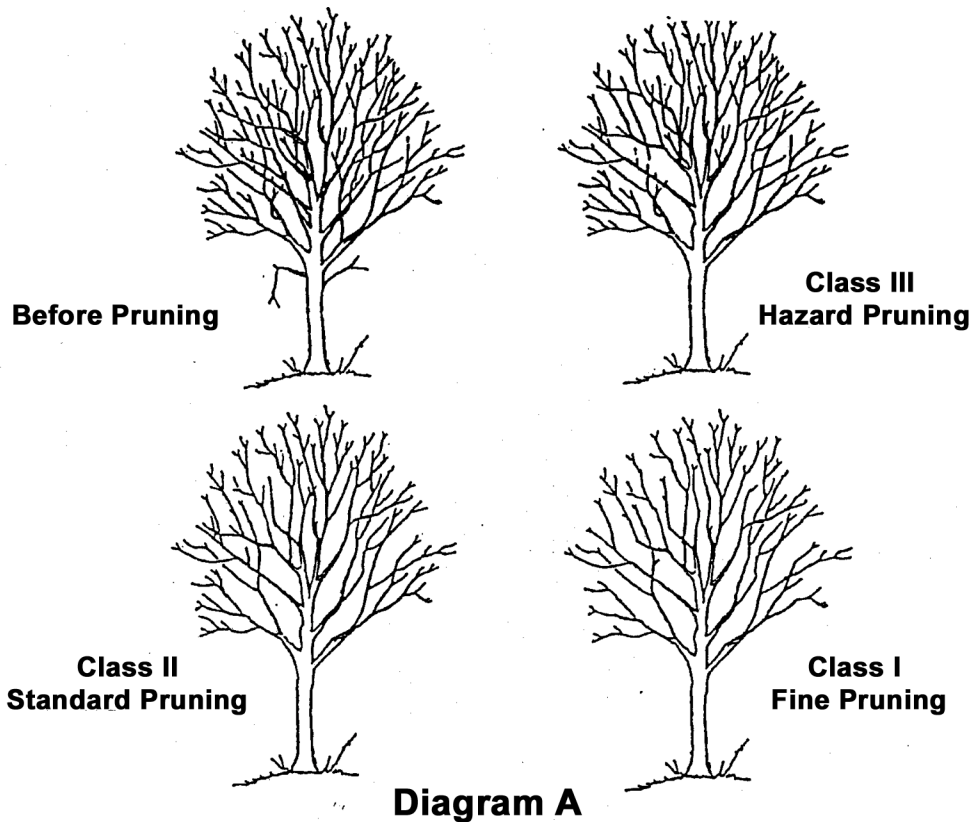
Marietta Tree Commission

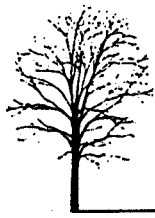
Appendix A

National Arborist Association PRUNING STANDARDS FOR SHADE TREES (as revised 1988)

This standard is provided by the National Arborist Association to assist tree service companies, utilities, municipalities, governmental agencies, landscape architects, and others in writing contract specifications for tree pruning. It is not intended to be a how-to manual but to define the limits and criteria for arboricultural work, recognizing that regional practices may dictate variations in this standard.

This standard was prepared by the Standard Practices Committee of the National Arborist Association, Inc, a professional trade association founded in 1938.





INTRODUCTION

Pruning of shade trees shall only be performed by qualified tree workers who, through related training and/or on the job experience, are familiar with the techniques and hazards of arboricultural work including trimming, maintaining, repairing or removing trees, and the equipment used in such operations. The pruning of trees can be a potentially hazardous occupation and is to be undertaken only by qualified personnel or trainees under the direct supervision of qualified personnel. All tree workers/trainees should be covered by workers compensation, property damage, public liability and completed operations insurance.

Trees are complex living organisms whose growth, appearance, condition and longevity are greatly influenced by environmental factors. Useful generalizations concerning pruning practices can be made to improve the health, structure, aesthetics, and safety of trees, even though tree species may vary in their cultural requirements, and even within a species individual trees differ in branch configuration.

There are four classes of pruning established to accommodate varying work needs. Pruning performed on certain tree types, such as palm and Norfolk Island pine, might not fall into these categories due to their particular growth characteristics.

CLASS I -FINE PRUNING

Fine pruning is recommended for premium quality work with emphases on aesthetic considerations in addition to structural integrity. Fine pruning shall consist of the removal of dead, dying, diseased, decayed, interfering, objectionable, obstructing, and

weak branches, as well as selective thinning to lessen wind resistance. The removal of such described branches is to include those on the main trunks, as well as those inside the leaf area (see Diagram A). An occasional undesirable branch up to one-half inch in diameter, as described above, may remain within the main leaf area to its full length when it is not practical to remove it.

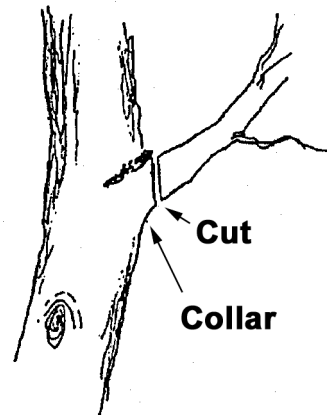
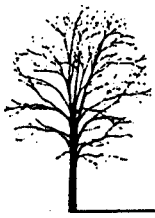


Diagram B

All of the following General Specifications, listed below in italics, apply to Class I, Fine Pruning.

- a. *All cuts shall be made as close as possible to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub (see diagram B). Bark on the edge of all pruning cuts should remain firmly attached.*
- b. *All branches too large to support with one hand shall be precut (see diagram C) to avoid splitting or tearing of the bark. Where necessary, ropes or other equipment should be used to lower large branches or stubs to the ground.*



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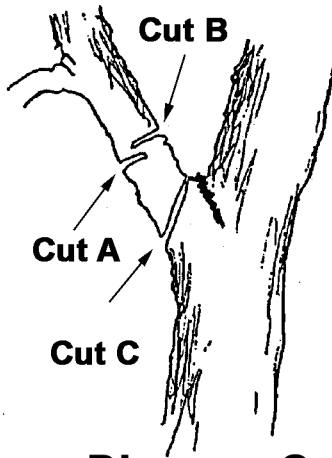


Diagram C

c. *Treatment of cuts and wounds with wound dressing or paints has not been shown to be effective in preventing or reducing decay, and is not recommended for that reason. Wound dressing over infected wood may stimulate the decay process. If wounds are painted for cosmetic or other reasons, then materials non-toxic to the cambium layer of meristematic tissue should be used. Care must be taken to apply a thin coating of the material only to the exposed wood.*

d. *Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established should be bark traced if the bark appears loose or damaged. Such tracing shall not penetrate the xylem (sapwood), and margins shall be kept rounded.*

e. *Equipment that will damage the bark and cambium layer should not be used on or in the tree. For example, the use of climbing spurs (hooks, irons) is not an acceptable work practice for pruning operations on live trees. Sharp tools shall be used so that clean cuts will be made at all times.*

f. *All cut limbs shall be removed from the crown upon completion of the pruning.*

g. *Trees susceptible to serious infectious diseases should not be pruned at the time of year during which the pathogens causing the diseases or the insect vectors are most active. Similarly, if pruning wounds may attract harmful insects, pruning should be timed so as to avoid insect infestation.*

These additional specifications shall also apply to Class I, Fine Pruning.

h. *Remove the weaker or less desirable of crossed or rubbing branches. Such removal, if possible, should not leave large open spaces in the general outline of the tree.*

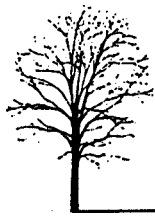
i. *Where practical, all visible girdling roots shall be treated as follows;*

1. *Cut root at either end, or:*
2. *Sever root in center with a chisel and allow growing tree to push root away.*
3. *Remove section of root.*

j. *The presence of any disease condition, fungus fruit bodies, decayed trunk or branches, split crotches or branches, cracks, or other structural weakness should be reported to a supervisor and/or the home owner, and corrective measures recommended.*

CLASS II -- STANDARD PRUNING

Standard pruning is recommended where aesthetic considerations are secondary to structural integrity and tree health concerns.



Standard pruning shall consist of the removal of dead, dying, diseased, decaying, interfering, objectionable, obstructing, and weak branches, as well as selective thinning to lessen wind resistance.

The removal of such described branches is to include those on the main trunks, as well as those inside the leaf area (see Diagram A). An occasional undesirable branch up to one inch in diameter may; remain within the main leaf area where it is not practical to remove it.

[General Specifications for Class II, Standard Pruning are the same as those listed in italics under Class I, Fine Pruning.]

These additional specifications shall also apply to Class II, Standard Pruning:

- h. All visible girdling roots are to be reported to a supervisor and or the owner.
- i. The presence of any disease condition, fungus fruit bodies, decayed trunk or branches, split crotches or branches, cracks, or other structural weakness should be reported to a supervisor and/or the home owner, and corrective measures recommended

CLASS III -HAZARD

Hazard Pruning is recommended where safety considerations are paramount.

Hazard Pruning shall consist of the removal of dead, diseased, decayed, and obviously weak branches, two inches in diameter or greater (see Diagram A).

[General Specifications for Class III, Hazard Pruning are the same as those listed in italics under Class I, Fine pruning.]

These additional specifications shall also apply to Class III, Hazard Pruning:

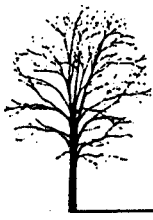
- h. All visible girdling roots are to be reported to a supervisor and or the owner.
- i. The presence of any disease condition, fungus fruit bodies, decayed trunk or branches, split crotches or branches, cracks, or other structural weakness should be reported to a supervisor and/or the home owner, and corrective measures recommended

CLASS IV -CROWN REDUCTION PRUNING

Crown reduction pruning shall consist of the reduction of tops, sides or individual limbs. It involves the removal of a parent limb or dominant leader at the point of attachment of a lateral branch, as illustrated in Diagram D. This practice is to be undertaken only for the following reasons.

- a. In situations where branches interfere with utility lines.
- b. When there has been significant crown dieback.
- c. When it is necessary to achieve specific topiary training or dwarfing
- d. In cases where, due to storm damage or prior incorrect pruning, it is appropriate to prune for safety and aesthetic reasons.

The terms "cutting back" and "drop crotch pruning" are sometimes used interchangeably with the term "crown reduction pruning". By contrast, the term "topping" is often used to refer to a generally unacceptable arboricultural practice. Please refer to the Terminology section of this standard for further information.



[General Specifications for Class IV, Crown Reduction Pruning are the same as those listed in italics under Class I, Fine Pruning.]

These additional specifications shall also apply to Class IV, Crown Reduction Pruning:

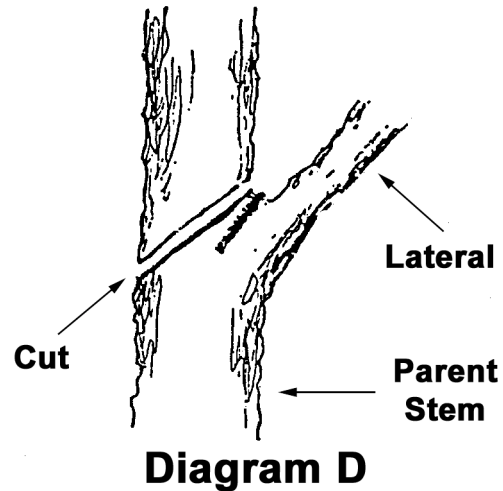
g. When removing a parent leader or limb to lateral branch, the final cut should be made as close to parallel as possible with the branch bark ridge and the lateral limb. The cut should be made as close to the bark ridge as possible without cutting into it. Care should be taken to avoid damaging the lateral limb when the final cut is made.

h. Remove the weaker or less desirable of crossed or rubbing branches. Such removal should not leave large open spaces in the general outline of the tree.

i. Generally in crown reduction pruning, not more than one-third of the total leaf area should be removed in a single operation.

ii. Every effort should be made to cut back to a lateral at least one-third to one-half the diameter of the parent limb or leader that is being removed. Cuts not made to a suitable lateral, sometimes called 'topping cuts', are not be permitted.

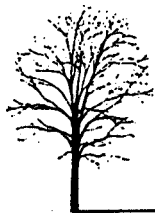
j. Before a branch is cut back, the ratio of live wood in the branch to leaf surface area in the remaining branch should be considered carefully. The leaves must supply sufficient carbohydrates (food) to maintain the wood in the remaining branch as well as send excess carbohydrates to the trunk and roots for storage and later use. Generally, not more than one-third the total leaf surface area should be removed at anyone time.



k. To prevent sunburn on thin-barked trees, just enough limbs shall be removed to get the desired effect without admitting too much sunlight to the trunk of the tree or the top of large branches. Care should be taken with the following species: Linden (*Tilia* spp.), Maple (*Acer* spp.), Beech (*Fagus* spp.), Apple (*Malus* spp.), Oak (*Quercus* spp.), and other trees susceptible to sunburn. Sunburn damage may be minimized by doing work on susceptible species during the dormant season.

m. When removing the lower branches of trees for crown elevation or underclearance, care should be take to maintain a symmetrical appearance, and cuts should not be made so large or so numerous that they will prevent normal sap flow.

n. Periodic crown reduction for certain species such as silver maple, the true poplars, and other trees with brittle and soft wood is an established arboricultural practice. This procedure has proved beneficial in maintaining safety over long periods of time. In all cases, it is preferable to make cuts when branches are small so as to avoid developing stem decay, and to begin training these trees



when they are young and prune them regularly thereafter so as to avoid removing an excessive amount of leaf surface in one operation.

TERMINOLOGY

BRANCH -A secondary shoot or stem arising from one of the main axes (ie. trunk or leader) of a tree.

BRANCH BARK RIDGE -The raised area of bark in the branch crotch that marks where the branch wood and trunk wood meet.

BRANCH COLLAR -Trunk tissue that forms around the base of a branch between the main stem and the branch. As a branch decreases in vigor or begins to die, the branch collar becomes more pronounced.

CALLUS -Tissue formed by the cambium layer around and over a wound.

CANOPY -Upper portion of the tree consisting of limbs, branches, and leaves.

CAMBIUM -Dividing layer of plant cells that forms sapwood (xylem) to the inside and bark (phloem) to the outside.

CLEAN CUTS -Cuts made using a sharp tool, with no marks or tears on the branch collar or the trunk.

CLOSURE -Refers to callus growth covering of a cut or other tree wound.

CROWN -Technically, the juncture of the trunk above the roots, but in common usage, it refers to the foliage comprising the uppermost branch structure.

CROWN ELEVATION -A regional term synonymous with UNDERCLEARANCE.

CUT -The exposed wood area that remains after the branch has been removed.

CUTTING BACK -Pruning designed to reduce the crown of a tree or individual branch. Sometimes referred to as heading back, drop crotch pruning, natural pruning, lateral pruning, or directional pruning. It is distinctly different from 'topping' (see definition) in that an effort is made to keep the symmetry of the tree on the sides as well as the top.

DECAY -The degradation of plant tissue, including wood by pathogens such as fungus organisms. Wood decay can reduce the structural integrity of a tree or its individual limbs.

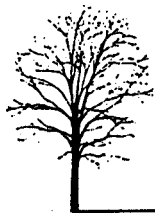
DORMANT -A state of inactivity, or no growth. Deciduous trees are considered to be dormant from the time the leaves fall until new foliage begins to appear.

DROP CROTCH PRUNING -The specific cutting back of a branch or leader to a lateral branch at least one-third to one-half the diameter of the cut being made.

GIRDLING ROOTS -Roots located above or below ground level whose circular growth around the base of the trunk or over individual roots applies pressure to the bark area, thereby choking or restricting the flow of sap.

LATERAL -A side branch or twig.

LEADER -A dominant upright stem, usually the main trunk.



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LIFTING -The removal of lower branches for under- clearance.

LIMB -Same as branch.

LINE CLEARANCE -Pruning for the safe operation and maintenance of uninterrupted electric service.

PARENT STEM -The main trunk system of the tree; also, the dominant leader of a major limb.

PHOTOSYNTHESIS -The process by which green plants manufacture food (carbohydrates) in cells containing chlorophyll, utilizing sunlight for energy.

POLLARDING -Trees cut back to essentially the same joint seasonally, resulting in multiple sprouts above the cuts.

PRECUT or PRECUTTING -The removal of the branch far enough beyond the finished cut so as to prevent splitting into the parent stem.

PRUNING -The removal of plant parts, dead or alive, in a careful and systematic manner so as to not damage other parts of the plant.

SAP FLOW -The course assumed by sap in its movement through a tree.

SAPWOOD -A wood layer of variable thickness found immediately inside the cambium, composed of water conducting vessels and living plant cells. Also known as xylem.

SCARS or INJURIES -Natural or man-made lesions of the bark in which wood is exposed.

SUCKER – a vigorous shoot arising at or below a graft union or near the base of the trunk.

SUNBURN – Bark injury caused by extreme heat from the sun.

SUNSCALD -Bark splitting or injury caused by temperature extremes or sudden temperature fluctuation.

THINNING -The removal of branches where they arise in order to let in light, reduce wind resistance, remove unwanted branches, or to retain a tree's natural shape.

TOPIARY -Trees sheared or pruned carefully in a formal shape.

TOPPING -The severe reduction of branches without consideration of the specifications for cutting back. (This is generally considered to be an undesirable practice.)

TRACING -Careful removal of the loose or damaged bark along the edges of a wound to encourage closure.

TRIMMING -See PRUNING.

UNDER-CLEARANCE -The removal of lower tree limbs to allow clearance beneath the tree crown. The same as CROWN ELEVATION.

WATER SPROUT -A vigorous shoot arising from the above-ground portion of the tree or above the graft union. See SUCKER.

WOUND -The opening that is created any time the tree's protective bark covering is penetrated, cut, or removed, injuring or destroying living tissue. Pruning a live branch creates a wound, even when the cut is properly made.