

**American National Standard**

*for Tree Care Operations —  
Tree, Shrub, and Other Woody Plant  
Management —  
Standard Practices (Pruning)*

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ANSI A300 (Part 1)-2008 Pruning  
Revision of ANSI A300 (Part 1)-2001



for Tree Care Operations —  
Tree, Shrub, and Other Woody Plant Management —  
Standard Practices (*Pruning*)

Secretariat  
Tree Care Industry Association, Inc.

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\* The term pruning type is replaced with the term pruning method. The purpose of this is to label the processes detailed in section 6 with greater accuracy.

**Foreword** This foreword is not part of American National Standard A300 (Part 1)-2008  
*Pruning*

ANSI A300 Standards are divided into multiple parts, each focusing on a specific aspect of woody plant management (e.g. Pruning, Fertilization, etc).

These standards are used to develop written specifications for work assignments. They are not intended to be used as specifications in and of themselves. Management objectives may differ considerably and therefore must be specifically defined by the user. Specifications are then written to meet the established objectives and must include measurable criteria.

ANSI A300 standards apply to professionals who provide for or supervise the management of trees, shrubs, and other woody landscape plants. Intended users include businesses, government agencies, property owners, property managers, and utilities. The standard does not apply to agriculture, horticultural production, or silviculture, except where explicitly noted otherwise.

This standard has been developed by the Tree Care Industry Association (TCIA), an ANSI-accredited Standards Developing Organization (SDO). TCIA is secretariat of the ANSI A300 standards, and develops standards using procedures accredited by the American National Standards Institute (ANSI).

Consensus for standards writing was developed by the Accredited Standards Committee on Tree, Shrub, and Other Woody Plant Management Operations – Standard Practices, A300 (ASC A300).

Prior to 1991, various industry associations and practitioners developed their own standards and recommendations for tree care practices. Recognizing the need for a standardized, scientific approach, green industry associations, government agencies and tree care companies agreed to develop consensus for an official American National Standard.

The result – ANSI A300 standards – unify and take authoritative precedence over all previously existing tree care industry standards. ANSI requires that approved standards be developed according to accepted principles, and that they be reviewed and, if necessary, revised every five years.

TCIA was accredited as a standards developing organization with ASC A300 as the consensus body on June 28, 1991. ASC A300 meets regularly to write new, and review and revise existing ANSI A300 standards. The committee includes industry representatives with broad knowledge and technical expertise from residential and commercial tree care, utility, municipal and federal sectors, landscape and nursery industries, and other interested organizations.

Suggestions for improvement of this standard should be forwarded to: A300 Secretary, c/o Tree Care Industry Association, Inc., 136 Harvey Road - Suite B101-B110, Londonderry, NH, 03053.

ANSI A300 (Part 1)-2008 Pruning was approved as an American National Standard by ANSI on May 1, 2008. ANSI approval does not require unanimous approval by ASC A300. The ASC A300 committee contained the following members at the time of ANSI approval:

Tim Johnson, Chair  
(Artistic Arborist, Inc.)

Bob Rouse, Secretary  
(Tree Care Industry Association, Inc.)

*(Continued)*

<i>Organizations Represented</i>	<i>Name of Representative</i>
American Nursery and Landscape Association .....	Warren Quinn Craig J. Regelbrugge (Alt.)
American Society of Consulting Arborists .....	Donald Zimar
American Society of Landscape Architects .....	Ron Leighton
Asplundh Tree Expert Company .....	Geoff Kempter Peter Fengler (Alt.)
Bartlett Tree Expert Company .....	Peter Becker Dr. Thomas Smiley (Alt.)
Davey Tree Expert Company .....	Joseph Tommasi R.J. Laverne (Alt.)
International Society of Arboriculture .....	Bruce Hagen Sharon Lilly (Alt.)
National Park Service .....	Robert DeFeo Dr. James Sherald (Alt.)
Professional Grounds Management Society .....	Thomas Shaner
Professional Land Care Network .....	Preston Leyshon
Society of Municipal Arborists .....	Gordon Mann Andy Hillman (Alt.)
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Utility Arborist Association .....	Matthew Simons Jeffrey Smith (Alt.)

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American Forests (Observer)  
Mike Galvin (Observer)  
Peter Gerstenberger (Observer)  
Dick Jones (Observer)  
Myron Laible (Observer)  
Beth Palys (Observer)  
Richard Rathjens (Observer)  
Richard Roux (NFPA-780 Liaison)

**ASC A300 mission statement:**

*Mission: To develop consensus performance standards based on current research and sound practice for writing specifications to manage trees, shrubs, and other woody plants.*

## American National Standard for Tree Care Operations —

# Tree, Shrub, and Other Woody Plant Management — Standard Practices (Pruning)

## 1 ANSI A300 standards

### 1.1 Scope

ANSI A300 standards present performance standards for the care and management of trees, shrubs, and other woody plants.

### 1.2 Purpose

ANSI A300 performance standards are intended for use by federal, state, municipal and private entities including arborists, property owners, property managers, and utilities for developing written specifications.

### 1.3 Application

ANSI A300 performance standards shall apply to any person or entity engaged in the management of trees, shrubs, or other woody plants.

## 2 Part 1 – Pruning standards

### 2.1 Purpose

The purpose of Part 1 – *Pruning* is to provide performance standards for developing written specifications for pruning.

### 2.2 Reasons for pruning

The reasons for tree pruning may include, but are not limited to, reducing risk, managing tree health and structure, improving aesthetics, or achieving other specific objectives. Pruning practices for agricultural, horticultural production, or silvicultural purposes are exempt from this standard unless this standard, or a portion thereof, is expressly referenced in standards for these other related areas.

## 2.3 Implementation

**2.3.1** Specifications for pruning should be written and administered by an arborist.

**2.3.1.1** Specifications should include location of tree(s), objectives, methods (types), and extent of pruning (location, percentage, part size, etc).

**2.3.2** Pruning specifications shall be adhered to.

## 2.4 Safety

**2.4.1** Pruning shall be implemented by an arborist, familiar with the practices and hazards of pruning and the equipment used in such operations.

**2.4.2** This performance standard shall not take precedence over applicable industry safe work practices.

**2.4.3** Performance shall comply with applicable Federal and State Occupational Safety and Health standards, ANSI Z133.1, Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and other Federal Environmental Protection Agency (EPA) regulations, as well as state and local regulations.

## 3 Normative references

The following standards contain provisions, which, through reference in the text, constitute provisions of this American National Standard. All standards are subject to revision, and parties to agreements based on this American National Standard shall apply the most recent edition of the standards indicated below.

ANSI Z60.1, Nursery stock  
ANSI Z133.1, Arboriculture – Safety requirements  
29 CFR 1910, General industry <sup>1)</sup>  
29 CFR 1910.268, Telecommunications <sup>1)</sup>  
29 CFR 1910.269, Electric power generation, transmission, and distribution <sup>1)</sup>  
29 CFR 1910.331 - 335, Electrical safety-related work practices <sup>1)</sup>

## 4 Definitions

**4.1 arboriculture:** The art, science, technology, and business of commercial, public, and utility tree care.

1) Available from U.S. Department of Labor, 200 Constitution Avenue, NW, Washington, DC 20210

**4.2 arborist:** An individual engaged in the profession of arboriculture who, through experience, education, and related training, possesses the competence to provide for or supervise the management of trees and other woody plants.

**4.3 arborist trainee:** An individual undergoing on-the-job training to obtain the experience and the competence required to provide for or supervise the management of trees and other woody plants. Such trainees shall be under the direct supervision of an arborist.

**4.4 branch:** A shoot or stem growing from a parent branch or stem (See Fig. 4.4).

**4.4.1 codominant branches/codominant leaders:** Branches or stems arising from a common junction, having nearly the same size diameter (See Fig. 4.4).

**4.4.2 lateral branch:** A shoot or stem growing from another branch (See Fig. 4.4).

**4.4.3 parent branch or stem:** A tree trunk or branch from which other branches or shoots grow (See Fig. 4.4).

**4.4.4 scaffold branch:** A primary branch that forms part of the main structure of the crown (See Fig. 4.4).

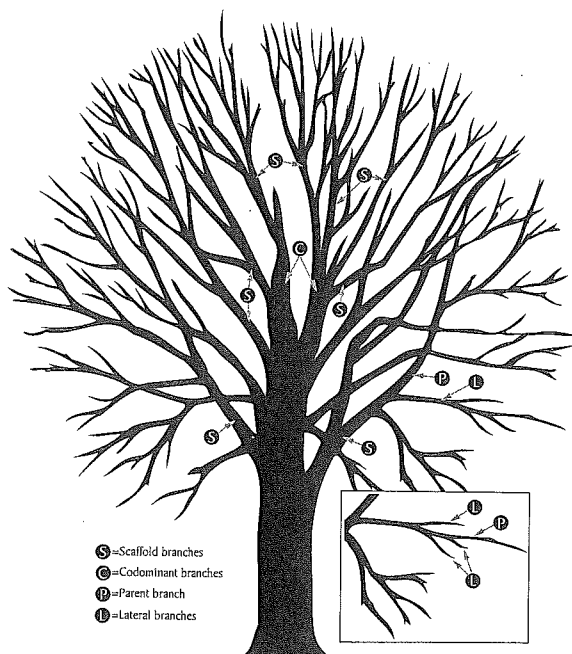


Figure 4.4 Standard branch definitions.

**4.5 branch bark ridge:** The raised area of bark in the branch crotch that marks where the branch and parent stem meet. (See Figs. 5.3.2 and 5.3.3).

**4.6 branch collar:** The swollen area at the base of a branch.

**4.7 callus:** Undifferentiated tissue formed by the cambium around a wound.

**4.8 cambium:** The dividing layer of cells that forms sapwood (xylem) to the inside and inner bark (phloem) to the outside.

**4.9 clean:** Selective pruning to remove one or more of the following non-beneficial parts: dead, diseased, and/or broken branches (7.2).

**4.10 climbing spurs:** Sharp, pointed devices strapped to a climber's lower legs used to assist in climbing trees. (syn.: gaffs, hooks, spurs, spikes, climbers)

**4.11 closure:** The process in a woody plant by which woundwood grows over a pruning cut or injury.

**4.12 crown:** Upper part of a tree, measured from the lowest branch, including all the branches and foliage.

**4.13 decay:** The degradation of woody tissue caused by microorganisms.

**4.14 espalier:** The combination of pruning, supporting, and training branches to orient a plant in one plane (6.5).

**4.15 establishment:** The point after planting when a tree's root system has grown sufficiently into the surrounding soil to support growth and anchor the tree.

**4.16 facility:** A structure or equipment used to deliver or provide protection for the delivery of an essential service, such as electricity or communications.

**4.17 frond:** A leaf structure of a palm.

**4.18 heading:** The reduction of a shoot, stem, or branch back to a bud or to a lateral branch not large enough to assume the terminal role.



- 4.19 interfering branches:** Crossing, rubbing, or upright branches that have the potential to damage tree structure and/or health.
- 4.20 internode:** The area between lateral branches or buds.
- 4.21 job briefing:** The communication of at least the following subjects for arboricultural operations: work specifications, hazards associated with the job, work procedures involved, special precautions, electrical hazards, job assignments, and personal protective equipment.
- 4.22 leader:** A dominant, typically upright, stem – usually the main trunk. There can be several leaders in one tree.
- 4.23 lion's tailing:** The removal of an excessive number of inner and/or lower lateral branches from parent branches. Lion's tailing is not an acceptable pruning practice (6.1.7).
- 4.24 live crown ratio:** Crown height relative to overall plant height.
- 4.25 mechanical pruning:** A pruning technique where large-scale power equipment is used to cut back branches (9.3.2).
- 4.26 method:** A procedure or process for achieving an objective.
- 4.27 peeling:** The removal of dead frond bases without damaging living trunk tissue at the point they make contact with the trunk. (syn.: shaving)
- 4.28 petiole:** A stalk of a leaf or frond.
- 4.29 pollarding:** Pruning method in which tree branches are initially headed and then reduced on a regular basis without disturbing the callus knob (6.6).
- 4.30 pruning:** The selective removal of plant parts to meet specific goals and objectives.
- 4.31 qualified line-clearance arborist:** An individual who, through related training and on-the-job experience, is familiar with the equipment and hazards in line clearance and has demonstrated the ability to perform the special techniques involved. This individual may or may not be currently employed by a line-clearance contractor.
- 4.32 qualified line-clearance arborist trainee:** An individual undergoing line-clearance training under the direct supervision of a qualified line-clearance arborist. In the course of such training, the trainee becomes familiar with the equipment and hazards in line clearance and demonstrates ability in the performance of the special techniques involved.
- 4.33 raise:** Pruning to provide vertical clearance (7.3).
- \***4.34 reduce:** Pruning to decrease height and/or spread (7.4).
- 4.35 remote area:** As used in the utility pruning section of this standard, an unpopulated area.
- 4.36 restoration:** Pruning to redevelop structure, form, and appearance of topped or damaged trees (6.3).
- 4.37 rural area:** As used in the utility pruning section of this standard, a sparsely populated place away from large cities, suburbs, or towns but distinct from remote areas.
- 4.38 shall:** As used in this standard, denotes a mandatory requirement.
- 4.39 shoot:** Stem or branch and its leaves, especially when young.
- 4.40 should:** As used in this standard, denotes an advisory recommendation.
- 4.41 specifications:** A document stating a detailed, measurable plan or proposal for provision of a product or service.
- 4.42 sprouts:** New shoots originating from epicormic or adventitious buds, not to be confused with suckers. (syn.: watersprouts, epicormic shoots)
- 4.43 standard, ANSI A300:** The performance parameters established by industry consensus as a rule for the measure of extent, quality, quantity, value or weight used to write specifications.
- 4.44 stem:** A woody structure bearing buds, foliage, and giving rise to other stems.
- 4.45 structural pruning:** Pruning to improve branch architecture (6.2).

**4.46 stub:** Portion of a branch or stem remaining after an internodal cut or branch breakage.

**4.47 subordination:** Pruning to reduce the size and ensuing growth rate of a branch or leader in relation to other branches or leaders.

**4.48 sucker:** Shoot arising from the roots.

**4.49 thin:** pruning to reduce density of live branches (7.5).

**4.50 throw line:** A small, lightweight line with a weighted end used to position a climber's rope in a tree.

**4.51 topping:** Reduction of tree size using internodal cuts without regard to tree health or structural integrity. Topping is not an acceptable pruning practice (6.1.7).

**4.52 tracing:** The removal of loose, damaged tissue from in and around the wound.

**4.53 trunk:** The main woody part of a tree beginning at and including the trunk flare and extending up into the crown from which scaffold branches grow.

**4.54 trunk flare:** 1. The area at the base of the plant's trunk where it broadens to form roots. 2. The area of transition between the root system and trunk (syn.: root flare).

**4.55 urban/residential areas:** Populated areas including public and private property that are normally associated with human activity.

**4.56 utility:** A public or private entity that delivers a public service, such as electricity or communications.

**4.57 utility space:** The physical area occupied by a utility's facilities and the additional space required to ensure its operation.

**4.58 vista/view prune:** Pruning to enhance a specific view without jeopardizing the health of the tree (6.4).

**4.59 wound:** An opening that is created when the bark of a live branch or stem is cut, penetrated, damaged, or removed.

**4.60 woundwood:** Partially differentiated tissue responsible for closing wounds. Woundwood develops from callus associated with wounds.

## 5 Pruning practices

### 5.1 Tree inspection

**5.1.1** An arborist or arborist trainee shall visually inspect each tree before beginning work.

**5.1.2** If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.

**5.1.3** Job briefings shall be performed as outlined in ANSI Z133.1, subclause 3.1.4.

### 5.2 Tools and equipment

**5.2.1** Equipment, tools, and work practices that damage living tissue and bark beyond the scope of normal work practices shall be avoided.

**5.2.2** Climbing spurs shall not be used when entering and climbing trees for the purpose of pruning.

Exceptions:

- when branches are more than throw-line distance apart and there is no other means of climbing the tree;
- when the outer bark is thick enough to prevent damage to the inner bark and cambium;
- in remote or rural utility rights-of-way.

### 5.3 Pruning cuts

**5.3.1** Pruning tools used in making pruning cuts shall be sharp.

**5.3.2** A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent branch without cutting into the branch bark ridge or branch collar or leaving a stub (see Figure 5.3.2).

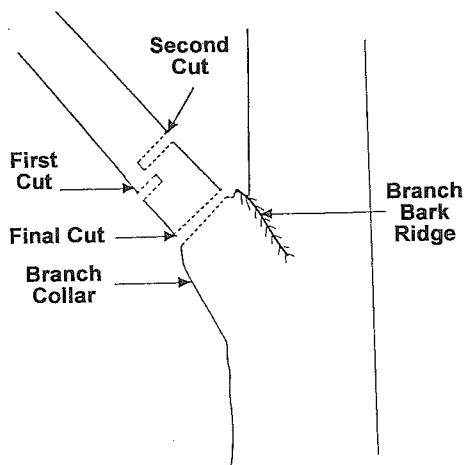


Figure 5.3.2. A cut that removes a branch at its point of origin. (See Annex A – Pruning cut guideline).

5.3.3 A pruning cut that reduces the length of a branch or parent stem shall be made at a slight downward angle relative to the remaining stem and not damage the remaining stem. Smaller cuts shall be preferred (see Fig. 5.3.3).

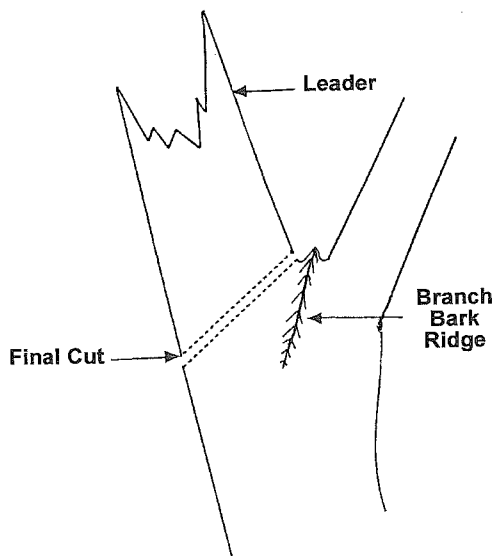


Figure 5.3.3. A cut that reduces the length of a branch or parent stem.

5.3.4 When pruning to a lateral, the remaining lateral branch should be large enough to assume the terminal role.

5.3.5 The final cut should result in a flat surface with adjacent bark firmly attached.

5.3.6 When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

5.3.7 Tree branches shall be removed in such a manner so as to avoid damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

5.3.8 A cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent branch (see Figure 5.3.8).

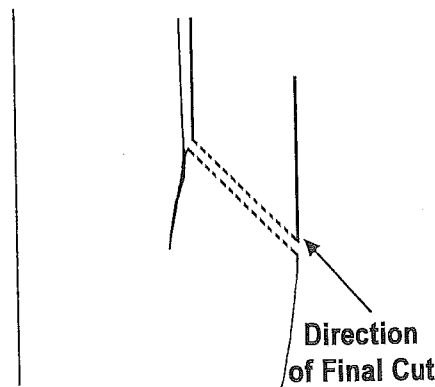


Figure 5.3.8. A cut that removes a branch with a narrow angle of attachment.

5.3.9 Severed branches shall be removed from the crown upon completion of the pruning, at times when the tree would be left unattended, or at the end of the workday.

5.4 Wound treatment

5.4.1 Wound treatments shall not be used to cover wounds or pruning cuts, except when necessary for disease, insect, mistletoe, or sprout control, or for cosmetic reasons.

5.4.2 Wound treatments that are damaging to tree tissues shall not be used.

5.4.3 When tracing wounds, only loose, damaged tissue shall be removed.

## 6 Pruning objectives

6.1 Pruning objectives shall be established prior to beginning any pruning operation.

6.1.1 Objectives should include, but are not limited to, one or more of the following:

- Risk reduction
- Manage health
- Clearance
- Structural improvement/correction
- View improvement/creation
- Aesthetic improvement
- Restoration

6.1.2 Established objectives should be specified in writing (See Annex B – *Specification writing guideline*).

6.1.3 To obtain the defined objective, the growth cycles, structure, species, and the extent of pruning to be performed shall be considered.

6.1.4 Not more than 25 percent of the foliage should be removed within an annual growing season. The percentage and distribution of foliage to be removed shall be adjusted according to the plant's species, age, health, and site.

6.1.5 When frequent excessive pruning is necessary for a tree to avoid conflicts with elements such as infrastructure, view, traffic, or utilities, removal or relocation of the tree shall be considered.

6.1.6 Pruning cuts should be made in accordance with section 5.3 *Pruning cuts*.

6.1.7 Topping and lion's tailing shall be considered unacceptable pruning practices for trees.

6.2 **Structural:** Structural pruning shall consist of selective pruning to improve tree and branch architecture primarily on young- and medium-aged trees.

6.2.1 Size and location of leaders or branches to be subordinated or removed should be specified.

6.2.2 Dominant leader(s) should be selected for development as appropriate.

6.2.3 Strong, properly spaced scaffold branch structure should be selected and maintained by reducing or removing others.

6.2.4 Temporary branches should be retained or reduced as appropriate.

6.2.5 Interfering, overextended, defective, weak, and poorly attached branches should be removed or reduced.

6.2.6 At planting, pruning should be limited to cleaning (7.2).

6.3 **Restoration:** Restoration shall consist of selective pruning to redevelop structure, form, and appearance of severely pruned, vandalized, or damaged trees.

6.3.1 Location in tree, size range of parts, and percentage of sprouts to be removed should be specified.

6.4 **Vista/view:** Vista/view pruning shall consist of the use of one or more pruning methods (types) to enhance a specific line of sight.

6.4.1 Pruning methods (types) shall be specified.

6.4.2 Size range of parts, location in tree, and percentage of foliage to be removed should be specified.

## 6.5 Espalier

6.5.1 Branches that extend outside the desired plane of growth shall be pruned or tied back.

6.5.2 Ties should be replaced as needed to prevent girdling the branches at the attachment site.

## 6.6 Pollarding

6.6.1 Consideration shall be given to the ability of the individual tree to respond to pollarding.

6.6.2 Management plans shall be made prior to the start of the pollarding process for routine removal of sprouts.

**6.6.3** Heading cuts shall be made at specific locations to start the pollarding process. After the initial cuts are made, no additional heading cuts shall be made.

**6.6.4** Sprouts growing from the cut ends of branches (knuckles) should be removed annually during the dormant season.

## 7 Pruning methods (types)

**7.1** One or more of the following methods (types) shall be specified to achieve the objective.

**7.2 Clean:** Cleaning shall consist of pruning to remove one or more of the following non-beneficial parts: dead, diseased, and/or broken branches.

**7.2.1** Location of parts to be removed shall be specified.

**7.2.2** Size range of parts to be removed shall be specified.

**7.3 Raise:** Raising shall consist of pruning to provide vertical clearance.

**7.3.1** Clearance distance shall be specified.

**7.3.2** Location and size range of parts to be removed should be specified.

**7.3.3** Live crown ratio should not be reduced to less than 50 percent.

**7.4 Reduce:** Reducing shall consist of pruning to decrease height and/or spread.

**7.4.1** Consideration shall be given to the ability of a species to tolerate this type of pruning.

**7.4.2** Location of parts to be removed or clearance requirements shall be specified.

**7.4.3** Size of parts should be specified.

**7.5 Thin:** Thinning shall consist of selective pruning to reduce density of live branches.

**7.5.1** Thinning should result in an even distribution of branches on individual branches and throughout the crown.

**7.5.2** Not more than 25 percent of the crown should be removed within an annual growing season.

**7.5.3** Location of parts to be removed shall be specified.

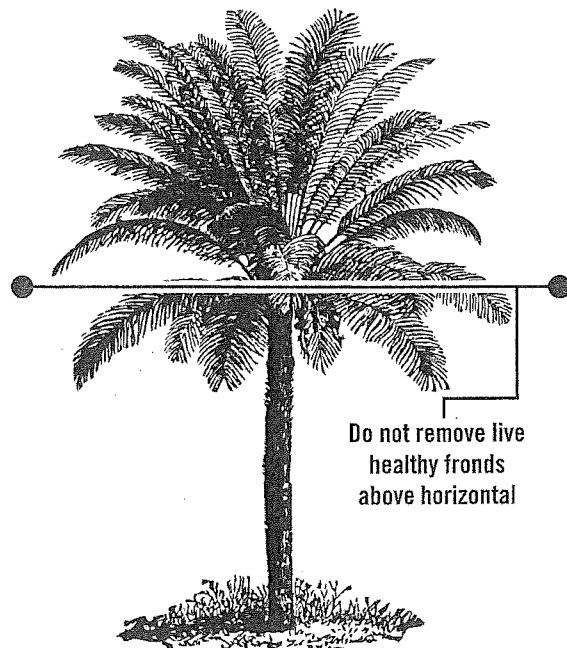
**7.5.4** Percentage of foliage and size range of parts to be removed shall be specified.

## 8 Palm pruning

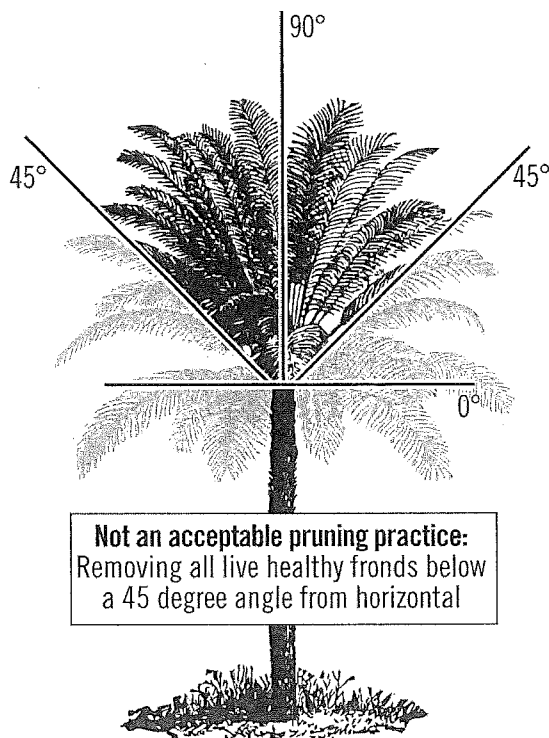
**8.1** Palm pruning should be performed when fronds, fruit, or loose petioles may create a dangerous condition.

**8.2** Live healthy fronds should not be removed.

**8.3** Live, healthy fronds above horizontal shall not be removed. Exception: Palms encroaching on electric supply lines (see Fig. 8.3a and 8.3b).



**Figure 8.3a** Frond removal location.



**Figure 8.3b An overpruned palm (not an acceptable pruning practice).**

**8.4** Fronds removed should be severed close to the petiole base without damaging living trunk tissue.

**8.5** Palm peeling (shaving) should consist of the removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue.

## 9 Utility pruning

### 9.1 Purpose

The purpose of utility pruning is to prevent the loss of service, comply with mandated clearance laws, prevent damage to equipment, maintain access, and uphold the intended usage of the facility/utility space while adhering to accepted tree care performance standards.

### 9.2 General

**9.2.1** Only a qualified line-clearance arborist or line-clearance arborist trainee shall be assigned to

line clearance work in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268 or 29 CFR 1910.269.

**9.2.2** Utility pruning operations are exempt from requirements in subclause 5.1, *Tree Inspection*, for conditions outside the utility pruning scope of work.

**9.2.3** Job briefings shall be performed as outlined in ANSI Z133.1, subclause 3.1.4.

## 9.3 Utility crown reduction pruning

### 9.3.1 Urban/residential areas

**9.3.1.1** Pruning cuts should be made in accordance with subclause 5.3, *Pruning cuts*. The following requirements and recommendations of 9.3.1.1 are repeated from subclause 5.3 *Pruning cuts*.

**9.3.1.1.1** A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent branch, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

**9.3.1.1.2** A pruning cut that reduces the length of a branch or parent stem shall be made at a slight downward angle relative to the remaining stem and not damage the remaining stem. Smaller cuts shall be preferred (see Fig. 5.3.3).

**9.3.1.1.3** The final cut shall result in a flat surface with adjacent bark firmly attached.

**9.3.1.1.4** When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

**9.3.1.1.5** Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

**9.3.1.1.6** A cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent branch (see Figure 5.3.8).

**9.3.1.2** A minimum number of pruning cuts should be made to accomplish the purpose of facility/utility pruning. The structure and growth habit of the tree should be considered.

**9.3.1.3** Trees directly under and growing into facility/utility spaces should be removed or pruned. Such pruning should be done by removing entire branches or leaders or by removing branches that have laterals growing into (or once pruned, will grow into) the facility/utility space.

**9.3.1.4** Trees growing next to, and into or toward, facility/utility spaces should be pruned by reducing branches to laterals (5.3.3) to direct growth away from the utility space or by removing entire branches. Branches that, when cut, will produce sprouts that would grow into facilities and/or utility space should be removed.

**9.3.1.5** Branches should be cut to laterals or the parent branch and not at a pre-established clearing limit. If clearance limits are established, pruning cuts should be made at laterals or parent branches outside the specified clearance zone.

#### **9.3.2 Rural/remote locations – mechanical pruning**

Cuts should be made close to the main stem, outside of the branch bark ridge and branch collar. Precautions should be taken to avoid stripping or tearing of bark or excessive wounding.

#### **9.4 Emergency service restoration**

During a utility-declared emergency, service must be restored as quickly as possible in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268, or 29 CFR 1910.269. At such times, it may be necessary, because of safety and the urgency of service restoration, to deviate from the use of proper pruning techniques as defined in this standard. Following the emergency, corrective pruning should be done as necessary.

## Annex A Pruning cut guideline

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### A-1 Three-cut method

Multiple cutting techniques exist for application of a three-cut method. A number of them may be used to implement an acceptable three-cut method.

A-1.1 The technique depicted in *Figure 5.3.2* demonstrates one example of a three-cut method that is common to hand-saw usage. It is not intended to depict all acceptable three-cut method techniques.



## Annex B Specification writing guideline

A300 (Part 1)-2008 *Pruning* standards are performance standards, and shall not be used as job specifications. Job specifications should be clearly detailed and contain measurable criteria.

The words "should" and "shall" are both used when writing standards. The word "shall" is used when writing specifications.

Writing specifications can be simple or complex and can be written in a format that suits your company/the job. The specifications consist of two sections.

### I. General:

This section contains all aspects of the work to be performed that needs to be documented, yet does not need to be detailed.

Saying under the General section that "all work shall be completed in compliance with A300 Standards" means the clauses covering safety, inspections, cuts, etc. will be adhered to. There is no need to write each and every clause into every job specification.

Other items that may be covered in the General section could be: work hours and dates, traffic issues, disposal criteria, etc.

The second section under Job Specifications would be:

### II. Details:

This section provides the clear and measurable criteria; the deliverables to the client.

This section, to be written in compliance with A300 standards, shall contain the following information:

**1. Objective – Clause 6**

These objectives originate from/with the tree owner or manager. The arborist shall clearly state what is going to be done to achieve the objective(s).

Objectives can be written for the entire job or individual trees. Rarely can one or two words clearly convey an objective so that all parties involved (client, sales, crew, etc.) can visualize the outcome.

**2. Method – Clause 7**

Here the method(s) to be used to achieve the objective are stated. Again, depending on the type of job, this can be stated for the individual tree or a group of trees.

**3. Location – Clause 7.2.1, 7.3.2, 7.4.2, 7.5.3**

This is the location in the tree(s) that the work methods are to take place.

**4. Density – Clause 7.3.1, 7.3.3, 7.5.1, 7.5.2, 7.5.4**

This is the amount or volume of parts that are to be removed and can be stated exactly or in ranges.

**5. Size – Clause 7.2.2, 7.3.2, 7.4.3, 7.5.4**

This is the size or range of sizes of cut(s) utilized to remove the volume specified.

**NOTE:** Items # 4 & 5 are directly related to resource allocation, staffing and dollars.

### SAMPLE PRUNING SPECIFICATIONS

**#1. Scope:** Large live oak on west side of pool

**Objectives:** Increase light penetration through east side of tree. Reduce risk potential of 1-inch-diameter branches falling.

**Specifications:** All broken branches and 1-inch-plus diameter dead branches shall be removed from the crown.

The three lowest 8-inch-plus diameter branches on the east side shall be thinned 25 percent with 1-inch- to 3-inch-diameter cuts.

**NOTE:** All work shall be completed in compliance with ANSI A300 and Z133.1 Standards.

## Annex B Specification writing guideline

#2. **Scope:** 1 Arizona ash

**Objective:** Enhance structure/structural development.

**Specifications:** General:

All pruning shall be completed in compliance with A300 Standards.

Detail:

Thin crown 20-25 percent with 1-inch- to 4-inch-diameter cuts. Reduce west codominant leader by approximately 12 feet.

#3. **Scope:** Twenty-three newly installed evergreen elms

**Objective:** Maximize establishment – reduce nuisance while enhancing natural growth habit.

All work shall be completed in compliance with A300 Standards and the following specifications.

**Specifications:** - Retain as much size as possible and 80-90 percent density of foliage.

- Lowest permanent branch will be 6 feet above grade in four to five years.

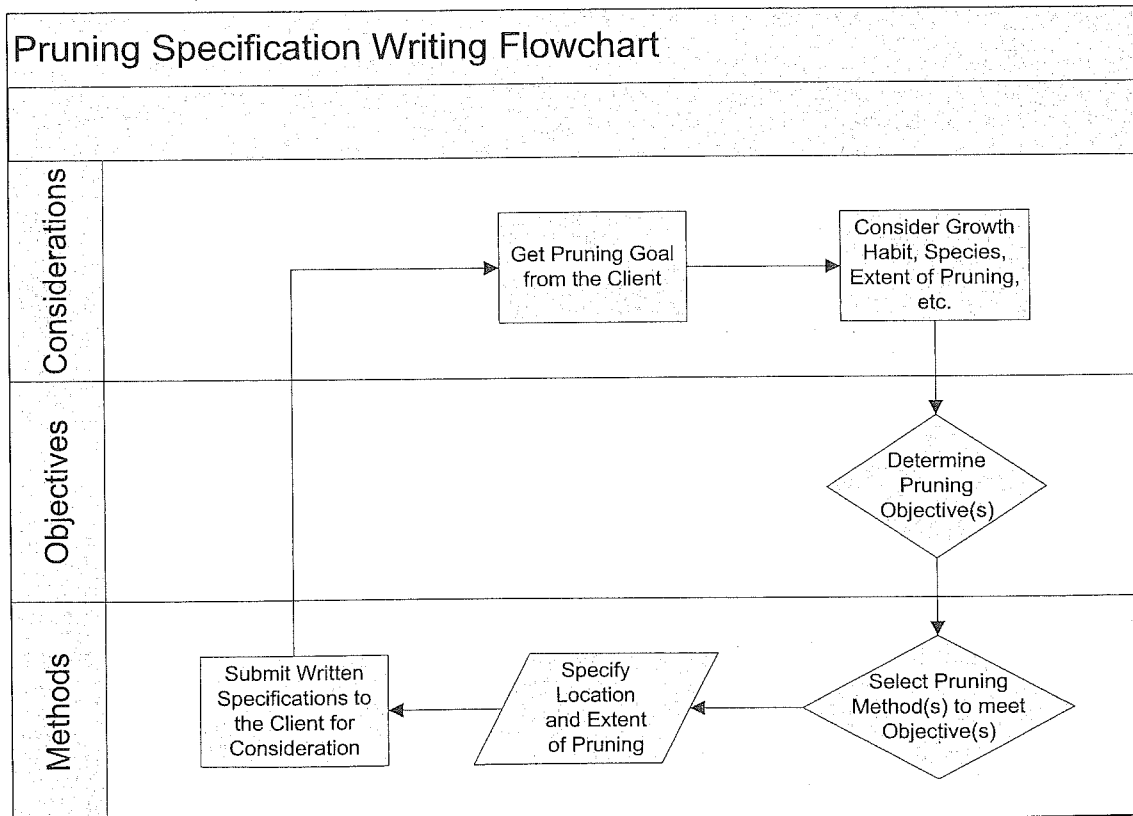
- Retain all sprout growth originating 18 inches above grade on trunk and 4 inches out from branch attachments throughout crown.

- Remove weakest rubbing branches.

- Remove dead branches.

- Reduce broken branches or branches with dead ends back to live laterals or buds. Heading cuts can be used.

- Maintain 6 inches behind adjacent edge of walks all growth that originates between 1.5 feet (18 inches) and 6 feet (72 inches) above grade. Heading cuts are acceptable.



## Annex C Applicable ANSI A300 interpretations

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The following interpretations apply to Part 1 – *Pruning*:

### **C-1 Interpretation of “should” in ANSI A300 standards**

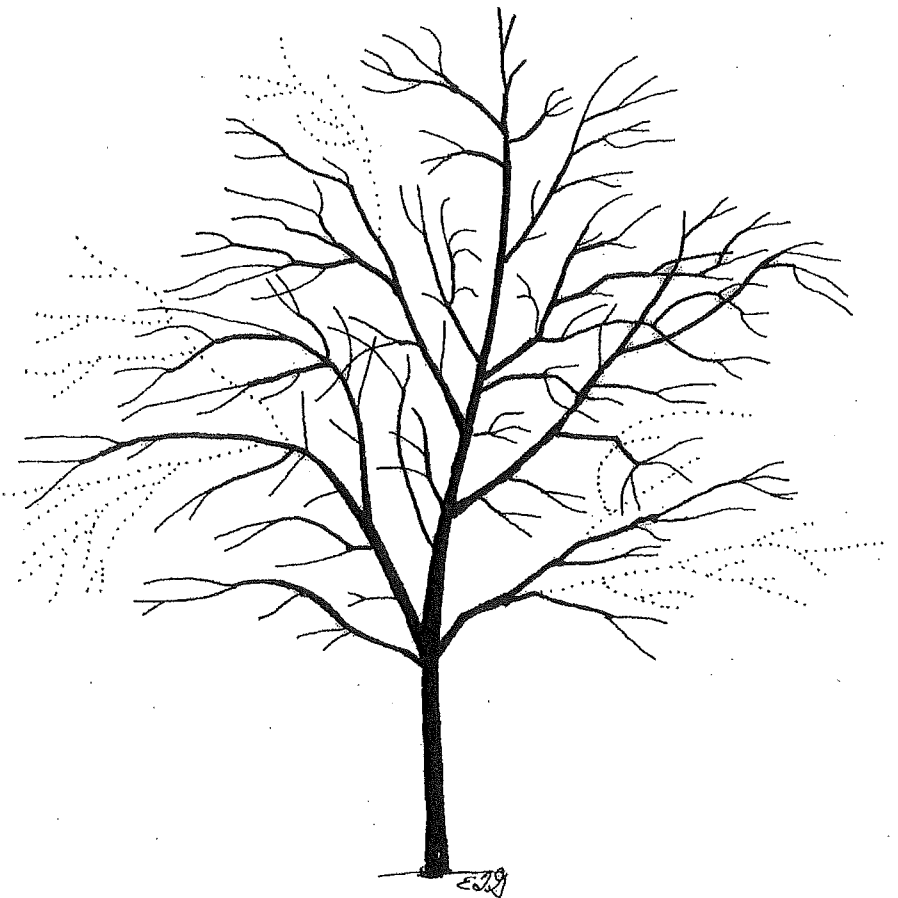
“An advisory recommendation” is the common definition of “should” used in the standards development community and the common definition of “should” used in ANSI standards. An advisory notice is not a mandatory requirement. Advisory recommendations may not be followed when defensible reasons for non-compliance exist.

### **C-2 Interpretation of “shall” in ANSI A300 standards**

“A mandatory requirement” is the common definition of “shall” used in the standards development community and the common definition of “shall” used in ANSI standards. A mandatory requirement is not optional and must be followed for ANSI A300 compliance.

# Best Management Practices

## TREE PRUNING (Revised 2008)



Companion publication to the ANSI A300 Part 1: Tree, Shrub, and  
Other Woody Plant Maintenance—Standard Practices, Pruning

# Best Management Practices

## TREE PRUNING (Revised, 2008)

Edward F. Gilman and Sharon J. Lilly

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## Purpose

Professionals in the field of arboriculture established a committee to develop standards for tree maintenance designed to provide a more uniform level of service and to help ensure public safety. This committee, working under the auspices of the American National Standards Institute (ANSI), developed standards for pruning, fertilization, support systems, and other aspects of tree care. *ANSI A300, The American National Standard for Tree Care Operations—Tree, Shrub, and Other Woody Plant Maintenance—Standard Practices* was written to provide minimal performance standards for use in writing maintenance specifications.

The International Society of Arboriculture (ISA) has developed companion publications known as Best Management Practices to aid in the interpretation and implementation of ANSI A300 standards. These publications are intended as guides for practicing arborists, tree workers, their supervisors, and the people who employ their services.

Because trees are unique living organisms, not all practices can be applied to all trees. It is important that contracts and specifications developed using these guidelines and the ANSI A300 standards are written or reviewed by a knowledgeable arborist. Departures from the standards should be made with careful consideration of the objectives and with supporting rationale.

*Best Management Practices: Tree Pruning* is the companion publication to *ANSI A300 Part 1—Tree, Shrub, and Other Woody Plant Maintenance—Standard Practices, Pruning*.

## Introduction

This document addresses the question “How do I ensure that my pruning meets industry standards and customer expectations while causing minimal harm to the tree?” It provides reasons why pruning is undertaken, explains pruning types and amounts, provides background on pruning cuts, reviews sample specifications, and comments on timing of these operations. Experience and observation teach the truth in Alex Shigo’s observation: “Pruning is one of the best things an arborist can do for a tree but one of the worst things we can do to a tree.” Pruning is a double-edged sword, either helping or hurting—depending on where, when, how, and why it is applied.

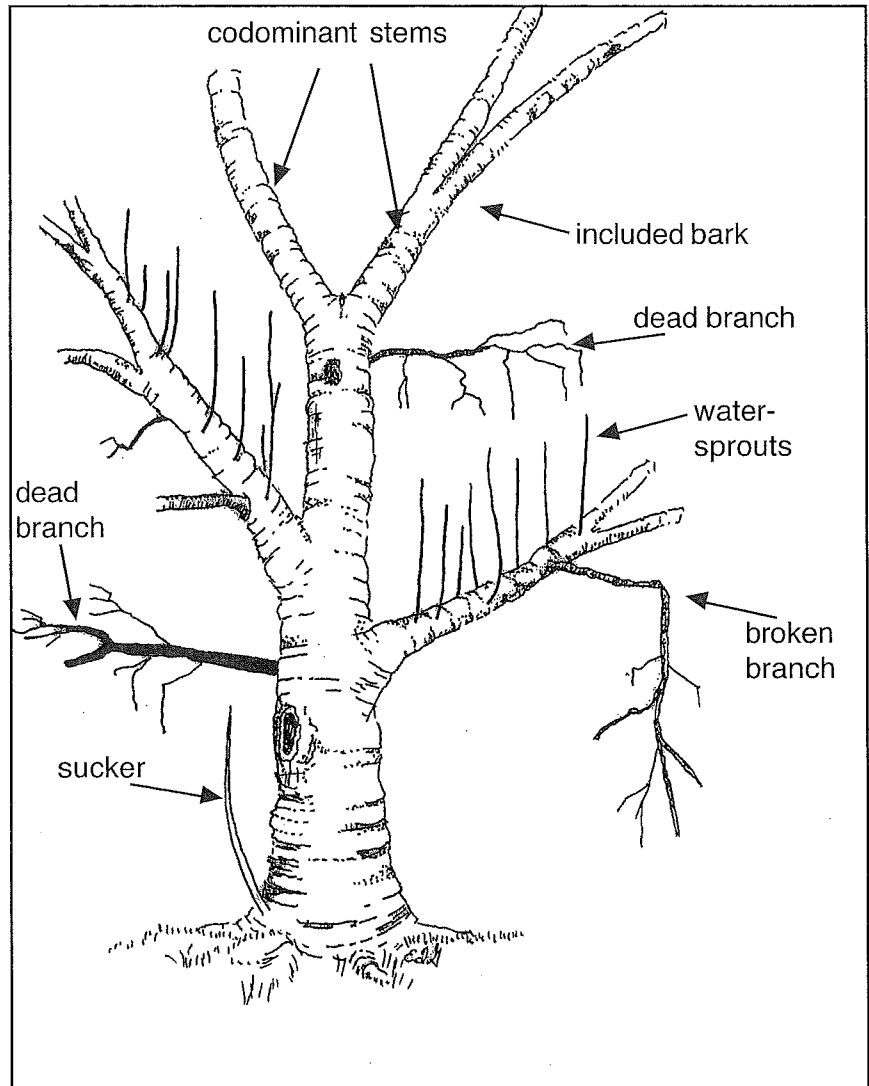
When pruning is properly executed, a variety of benefits are derived. Benefits include reduced risk of branch and stem breakage, better clearance for vehicles and pedestrians, improved health and appearance, enhanced view, and increased flowering. When improperly performed, pruning can harm the tree’s health, stability, and appearance. Several consequences occur when pruning is not performed at all (Figure 1). These consequences include development of low limbs; weak, codominant stems; defects such as included bark; and accumulation of dead branches. Formation of codominant stems and defects such as included bark can lead to increased risk of breakage.

One of the most common defects in planted trees is formation of large, low limbs. They could overextend and break, or they may droop under their own weight and have to be removed later, leaving a large pruning wound. Removal of large branches and those more than about half the trunk diameter is more likely to initiate decay than removal of smaller branches. Therefore, measures should be taken to minimize occurrence of this defect.

On mature trees, live branch removal is less desirable than it is on young trees, but sometimes it is necessary. However, cleaning the crown by removing dead, diseased, or broken branches is a highly recommended practice on mature trees. Because reduction cuts can initiate problems, perform crown reduction only after other options have been considered. Do not remove small interior branches because doing so adversely affects tree structure and can increase failure potential. Trees planted for use as shade trees should not be topped or rounded-over with heading cuts because this practice creates weak structure, exposes wood to infection, can initiate cracks and decay, and looks terrible. Topping also has been shown to increase risk of failure. Reaction zones can reduce available stored energy reserves, making such reserves less available for tree growth and defense.

It is essential first to evaluate the tree and the customer’s needs to determine which objectives should be accomplished with pruning. Appropriate pruning meth-

ods can be chosen to meet these objectives. The arborist then enters the tree and makes appropriate pruning cuts for the chosen pruning methods. This decision is based on an understanding of branch attachment and tree biology.



**Figure 1. Problems can develop on trees—including codominant stems; included bark; broken and dead branches; suckers and watersprouts; and large, low limbs that require removal.**

# Pruning Objectives

No tree should be pruned without first establishing clearly defined objectives. Several main objectives are described (Table 1), along with pruning types that help meet those objectives. These objectives serve as examples and can be expanded or shortened to meet site conditions and customer expectations. Removing the correct stems and branches to accomplish specified objectives is as important as making correct pruning cuts. Even with proper pruning cuts, if the wrong branches — or too many branches — are removed, nothing of merit has been accomplished.

**Table 1. Objectives of pruning.**

- 
- Reduce risk of failure
  - Provide clearance
  - Reduce shade and wind resistance
  - Maintain health
  - Influence flower or fruit production
  - Improve a view
  - Improve aesthetics
- 

## **Reduce Risk of Failure**

Risk of tree failure can be reduced by establishing a structural pruning program that begins at planting and could carry through the first 25 years or more, depending on the species. This program should be designed to create structurally sound trunk and branch architecture that will sustain the tree for a long period. Some structural pruning can be conducted on older trees as well. Medium-aged and mature trees can be cleaned, thinned, reduced, raised, or restored to manage risk. The choice among these pruning methods depends on the tree and the situation.

## **Provide Clearance**

Growth can be directed away from an object such as a building, security light, or power line by reducing or removing limbs on that side of the tree. However, trees often grow back to fill the void created by pruning. Regular pruning is required to maintain artificial clearance. Shortening or removing low branches can raise the crown. Crown reduction or pollarding helps maintain a tree smaller than it would be without pruning. Utility pruning keeps limbs clear of overhead wires and other utility structures.

### **Reduce Shade and Wind Resistance**

Lawns, ground covers, or shrubs can receive more sunlight when live foliage is removed from the crowns of large overstory trees. The tree's resistance to wind also can be reduced with pruning. Structural pruning, thinning, reduction, and pollarding are used to accomplish this objective.

### **Maintain Health**

Health can be maintained by cleaning the crown, especially in medium-aged and mature trees. Removing dead, diseased, and rubbing branches in the crowns of young trees also is important.

### **Influence Flower or Fruit Production**

Pruning can influence the number and/or size of flowers or fruit. Fruit size can be increased on certain plants, such as peach, by removing some of the developing fruit or flowers. Flower cluster size can be increased on certain species, such as crapemyrtle, by heading. Fruit production can be eliminated by removing flowers or developing fruit.

### **Improve a View**

A view can be enhanced or created by removing live branches at the edge of the crown, at the top of the tree, or on the lower side of the crown. This pruning can include thinning, reducing, pollarding, and raising.

### **Improve Aesthetics**

A tree can be pruned to improve appearance. Cleaning, reducing, thinning, pollarding, and restoring can be used to meet this objective.

## Pruning Methods (Types)

Several pruning methods (types) are used in arboriculture to achieve the tree owner or manager's objective. The four primary pruning methods include cleaning, thinning, raising, and reducing. Trees are also pruned to improve structure and for crown restoration. When writing job specifications the diameter range and location of the branches and stems to be removed should always be included.

### Pruning to Clean

Cleaning is the selective removal of dead, diseased, detached, cracked, and broken branches. This type of pruning is done to reduce the risk of branches falling from the tree and to reduce the movement of decay, insects, and diseases from dead or dying branches into the rest of the tree. It can be performed on trees of any age but is most common on medium-aged and mature trees. Cleaning is the preferred pruning type for mature trees because it does not remove live branches unnecessarily.

The location of branches to be removed should be specified if the entire crown is not going to be cleaned. The diameter of branches to be removed also should be specified. This usually is done by specifying the smallest branch to remove (for example, "clean branches 1 inch [2.5 cm] in diameter and larger").

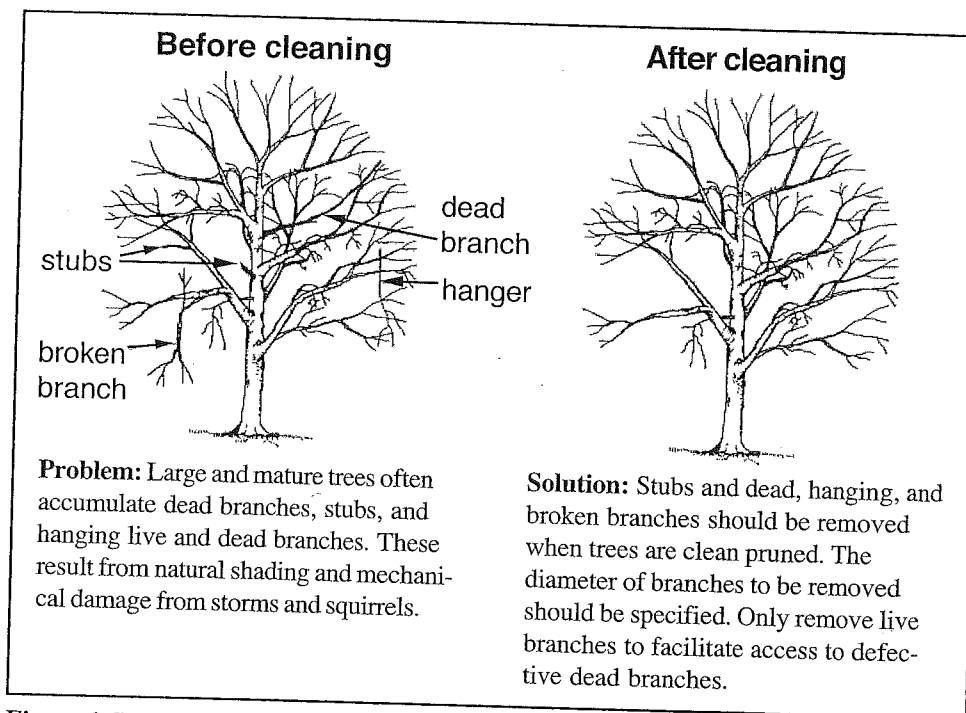


Figure 2. Pruning to clean

### Pruning to Thin

Thinning is the selective removal of small live branches to reduce crown density (Figure 3). Because the majority of small branches are at the outside edge of the crown, thinning is focused in that area. Proper thinning retains crown shape and size and should provide an even distribution of foliage throughout the crown.

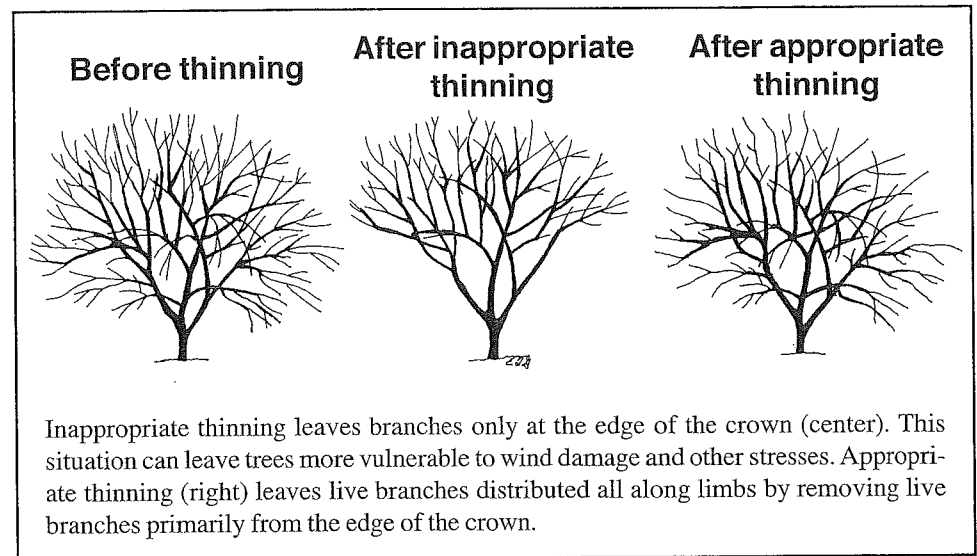


Figure 3. Thinning trees reduces density at the edge of the crown, not on the interior.

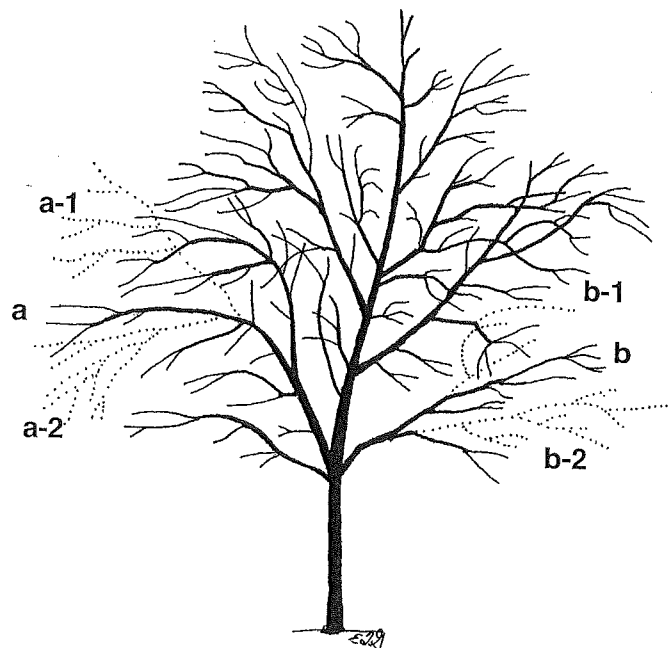
Thinning increases sunlight penetration and air movement through the crown. Increased light and air stimulate and maintain interior foliage, which can encourage taper on scaffold branches. Thinning a limb should be considered if cabling will be performed. Thinning also can remove suckers from the base of the tree and *some* watersprouts on the interior. Excessive removal of watersprouts often produces more watersprouts, so it is not recommended. Vigorous production of watersprouts on interior limbs often is a sign of overthinning, topping, or lion tailing.

Excessive branch removal on the lower two-thirds of a branch or stem (lion tailing) can have adverse effects on the tree and therefore is not an acceptable pruning practice (Figure 3). Lion tailing concentrates foliage at the ends of branches and may result in sunburned bark tissue, watersprouts, cracks in branches, reduced branch taper, increased load on branch unions, and weakened branch structure. Lion tailing also changes the dynamics of the limb and often results in excessive branch breakage.

If the entire crown will not be thinned, the areas to be thinned must be specified. The size range and percentage of foliage to be removed also must be specified—usually in the 10 to 15 percent range—but should not exceed 25 percent of the

foliage, especially on mature trees. Most thinning removes branches 1/2 inch (1.3 cm, small trees) to 2.5 inches (6.5 cm, mature trees) in diameter. If larger branches are removed, large gaps may be created in the crown, or watersprouts can result.

### Raising removes indicated branches



Lower branches *a* and *b* can be removed to raise the crown. However, subordinating branches *a* and *b* by removing upper and lower lateral branches *a-1*, *a-2*, *b-1*, and *b-2* will cause less stress for the tree. Removing *a-2* and *b-2* helps raise the crown. Removing *a-1* and *b-1* ensures that the branches will not grow up to become part of the permanent canopy. This consideration is important because left unpruned, these branches are likely to remain vigorous—forming low, codominant stems.

Figure 4. Raising

### Pruning to Raise (Elevate, Lift)

Raising is the selective removal of branches to provide vertical clearance. Crown raising shortens or removes lower branches of a tree to provide clearance for buildings, signs, vehicles, pedestrians, and vistas.

Excessive removal of lower limbs can slow development of trunk taper, can cause cracks or decay in the trunk, and concentrates foliage at the top of the tree.