

American National Standard

Part 1 – Standard Practices (Pruning)

1 ANSI A300 standards

1.1 Scope

ANSI A300 performance standards cover the care and management of trees, shrubs, palms, and other woody landscape plants.

1.2 Purpose

ANSI A300 standards are intended for the development of work practices, written **specifications**, best practices, regulations and other measures of performance.

1.2.1 These standards may be excerpted or incorporated by reference; however, they are not intended to be adopted in their entirety into laws and regulations or as work specifications without additional information and clarification (see *Annex B – Specification writing guideline*).

1.3 Application

ANSI A300 standards shall apply to any person or entity engaged in the management of trees, shrubs, palms, or other woody plants, including federal, state or local agencies, utilities, **arborists**, consultants, arboricultural or landscape firms, and managers or owners of property.

1.3.1 ANSI A300 standards shall not apply to commercial agricultural, horticultural production, or silviculture unless this standard, or a portion thereof, is expressly referenced in other standards or specifications.

2 Part 1 – Pruning standards

2.1 Purpose

The purpose of Part 1, *Pruning*, is to provide performance standards for the pruning of trees, shrubs, palms, and other woody plants, and to guide the

development of written specifications, best practices, training materials, regulations, and other performance measures.

For root pruning standards, refer to the most recent version of ANSI A300 Part 8, *Root Management*.

2.2 Reasons

Reasons for pruning include reducing **risk**, improving or maintaining health, developing desired structure and appearance, preventing interference with the built environment, and other specific objectives.

2.3 Implementation

2.3.1 Specifications for pruning should be written and administered by an arborist or other **qualified professional** (see clause 4).

2.3.2 Following pruning operations, monitoring and follow-up recommendations should be made based on the pruning objective, plant condition, site/location, species, and growth rate.

2.3.3 Pruning shall be performed only by arborists or other qualified professionals who, through related training and on-the-job experience, are familiar with the standards, practices, and hazards of **arboriculture** related to pruning and the equipment used in such operations.

2.3.4 The location and type of utilities and other obstructions shall be considered prior to pruning operations.

2.4 Safety

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

2.4.2 Performance, including pruning in proximity to energized conductors, shall comply with applicable Federal Occupational Safety and Health Administration (OSHA) standards, 29 CFR 1910.331 – 335, 29 CFR 1910.269, ANSI Z133, and state and local laws and regulations as they apply.

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 A300 *Tree, Shrub, and Other Woody Plant Management – Standard Practices*, all Parts¹

ANSI Z60 *Nursery stock*²

ANSI Z133 for *Arboricultural Operations – Safety Requirements*³

29 CFR 1910, *Occupational Safety and Health Standards (General Industry)*⁴

16 U.S.C. §§703-711, *Migratory Bird Treaty Act*⁵

16 U.S.C. 1531-1544, *Endangered Species Act*⁵

1) Available from the Tree Care Industry Association, www.tcia.org

2) Available from AmericanHort, www.americanhort.org

3) Available from the International Society of Arboriculture, www.isa-arbor.com

4) Available from U.S. Department of Labor, www.osha.gov

5) Available from U.S. Fish and Wildlife Service, www.fws.gov

4 Pruning objectives

4.1 One or more pruning objectives shall be specified (see Annex D – *Additional explanation of objectives, evolving concepts, explanation of material removed from previous versions*).

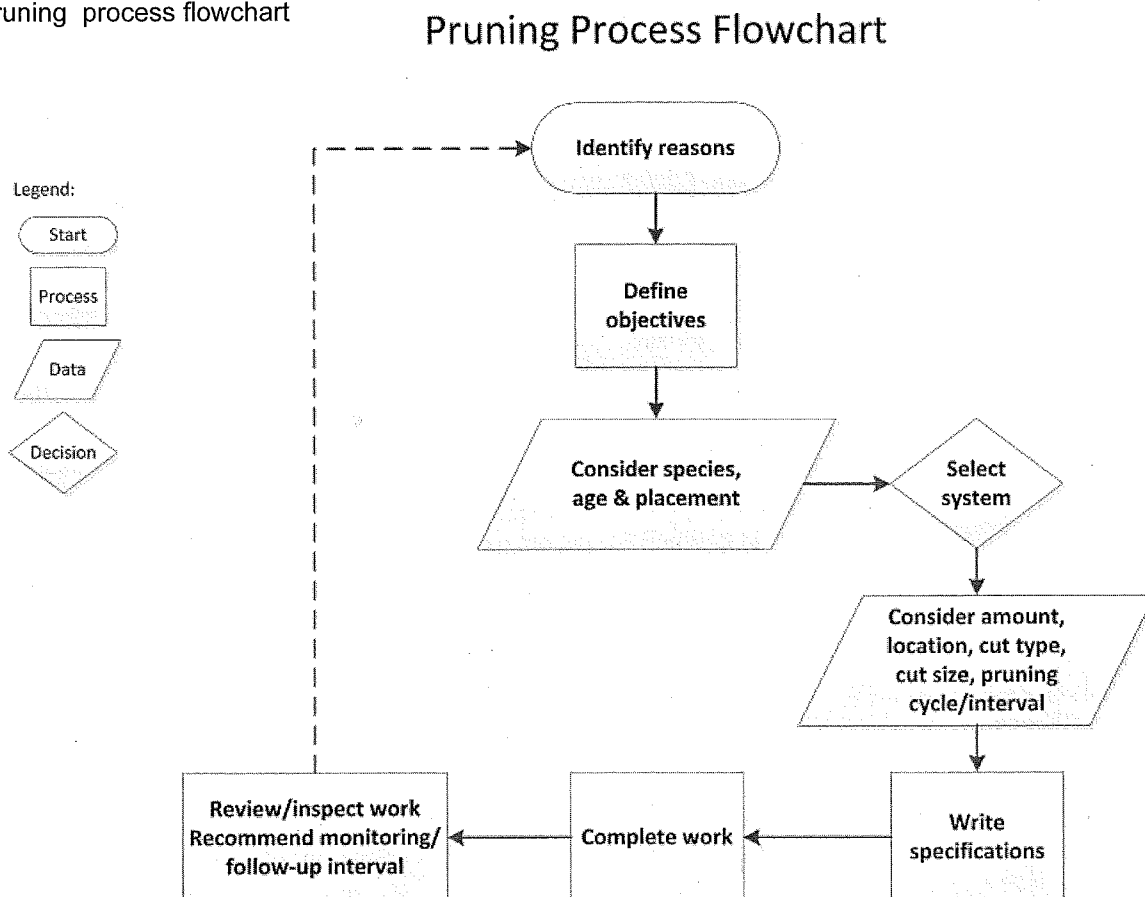
4.1.1 The **pruning system** (if specified, see subclause 5), plant health, growth habit, structure, species characteristics, expected response, and the ability of a plant to sustain the amount of pruning proposed shall be considered when establishing pruning objectives.

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

Manage risk (see ANSI A300 Part 9, *Tree Risk Assessment*, and ANSI A300 Part 3, *Supplemental Support Systems*).

Manage health (see ANSI A300 Part 10, *Integrated Pest Management* and ANSI A300 Part 2, *Soil Management*).

Fig. 4
Pruning process flowchart



Develop structure, such as to:

- Improve **branch** and **trunk** architecture;
- Promote or subordinate certain leaders, **stems**, or branches;
- Promote desirable branch spacing;
- Promote or discourage growth in a particular direction (**directional pruning**);
- Minimize future interference with traffic, lines of sight, or infrastructure, or other plants;
- Restore plants following damage; and/or,
- Rejuvenate shrubs (see Annex D – *Additional explanation of objectives, evolving concepts, explanation of material removed from previous versions*).

Provide clearance, such as to:

- Ensure safe and reliable **utility** services;
- Minimize current interference with traffic, lines of sight, infrastructure, or other plants;
- Raise crown(s) for movement of traffic or light penetration;
- Ensure lines-of-sight or desired views;
- Provide access to sites, buildings, or other structures; and/or,
- Comply with regulations.

Manage size or shape.

Improve aesthetics.

Manage production of fruit, flowers, or other products.

Manage wildlife habitat.

5 Pruning systems

5.1 A pruning system should be specified to achieve the desired long-term form of the plant.

5.1.2 Consideration shall be given to the ability of the plant to respond to the selected pruning system.

5.2 Natural (see Annex D – *Additional explanation of objectives, evolving concepts, explanation of material removed from previous versions*).

A natural system should be preferred.

5.2.1 A natural system should allow for changes in appearance resulting from pruning when achieving certain specified objectives, such as:

- Crown or branch **reduction**;
- **Raising** crowns;
- Developing or improving structure;
- Providing clearance;
- Improving tree health;
- Risk reduction; and,
- Enhancing views.

5.3 Pollarding

A pollarding system should be considered when appropriate to achieve management objectives.

5.3.1 Trees selected for pollarding should be of an appropriate size, species, and age.

5.3.1.1 Pollarding should not be initiated on mature trees.

5.3.1.2 A plan shall be made for the periodic removal of **shoots**.

5.3.2 To initiate pollarding, **heading** cuts should be made at specified heights or locations in the crown after which no additional heading cuts should be made.

5.3.3 Existing **pollard heads** should not be damaged or removed. Shoots growing from the pollard heads should be removed at an appropriate time, usually during the dormant season.

5.3.3.1 Shoots should be removed at intervals of three years or less. The recommended shoot removal interval should be determined by species, plant health, climate, and design intent.

5.3.4 Existing pollarded trees should be maintained as pollards.

5.4 Topiary

A topiary system should be used when the objective is a specified form or shape, such as a hedge.

5.4.1 Plants selected for a topiary system should be of an appropriate size, species, and age.

5.4.2 The shape of the topiary should be determined prior to the start of pruning.

5.4.3 Selective pruning and **shearing** should be performed as needed to develop and/or maintain the desired shape.

5.5 Espalier

An espalier system should be used when the objective is to grow plants in a **planary form**.

5.5.1 Plants selected for an espalier system should be of an appropriate size, species, and age.

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

5.5.3 Ties shall be replaced or adjusted as needed to prevent girdling.

5.6 Pleaching

A pleaching system should be used to train plants to achieve a desired form through pruning, interweaving and tying branches to one another, or to a frame.

5.6.1 Plants selected for a pleaching system should be of an appropriate size, species, and age.

5.6.2 When pleaching is initiated, branches that are not included within the desired form should be reduced, removed, or tied to other branches or a frame.

5.6.3 New shoots that are not growing within the desired form should be periodically pruned, or tied or woven into the desired form.

5.6.4 Ties shall be replaced or adjusted as needed to prevent girdling.

6 Pruning specifications (see Fig. 4 and Annex B – *Specification writing guideline*)

6.1 Pruning specifications should include:

- Physical location of the plants to be pruned;
- Pruning objectives;
- Pruning system;
- Type of parts to be removed (e.g. living or dead branches, fruit, mistletoe);
- **Pruning amount** (e.g. percent of foliage or crown, or number of branches to be removed);
- Location in crown of parts to be removed;
- Pruning cut types (e.g. removal, reduction, heading, shearing);
- Size range (e.g. diameter, length) of parts to be removed;
- Plan for disposal/repurposing of debris;
- Time frame for completion; and,
- Other information as necessary (e.g. topiary shape, clearance distances, desired views, lines of sight).

6.2 Pruning operations should remove no more living material than what is necessary to achieve specified objectives.

6.3 Species, size, age, condition, and site shall be considered when specifying the location and amount of live branches to be removed.

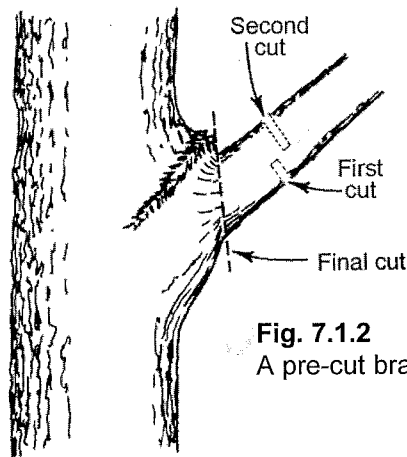


Fig. 7.1.2
A pre-cut branch

7 Pruning cuts

7.1 General

7.1.1 The smallest diameter cut that meets the objective should be preferred.

7.1.1.1 The number and size of cuts that expose heartwood should be minimized.

7.1.2 Branches shall be pre-cut when necessary to avoid splitting of the wood or tearing of the bark (see Fig. 7.1.2 and Annex A – *Pruning cut guideline*).

7.1.3 When removing a branch with a narrow angle of attachment, the cut should be made from the outside of the branch to prevent damage to the remaining branch or stem (see Fig. 7.1.3).

7.1.4 When removing a branch with included bark, the cut should be made as close as possible to the point where the wood of the stems join without damaging the remaining stem (see Fig. 7.1.3).

7.1.5 When removing a dead branch or stem, the final cut shall be made just outside the collar of living tissue, without leaving a dead **stub** (see Fig. 7.1.5).

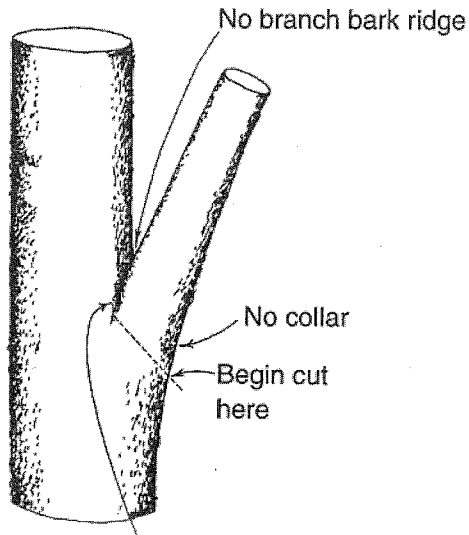


Fig. 7.1.3 Included bark
Removing a branch with narrow angle of attachment.

7.1.6 The final pruning cut should leave adjacent bark firmly attached.

7.1.7 Interior and lower branches should be retained when compatible with objectives and system.

7.1.8 When removing live branches, the majority of cuts should be in the outer portion of the crown.

7.1.9 A **flush-cut** is not an acceptable pruning practice (see Fig. 7.1.9).

7.2 Branch removal cuts (see subclause 10.42 and Annex A – *Pruning cut guideline*)

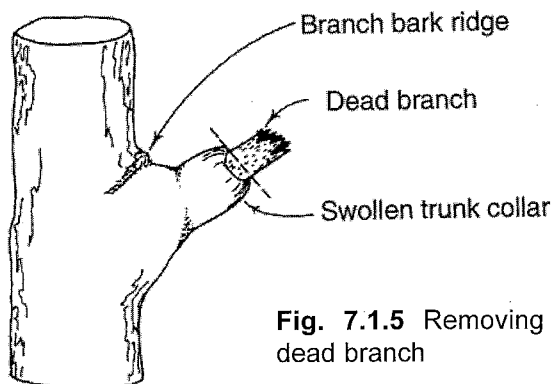


Fig. 7.1.5 Removing a dead branch

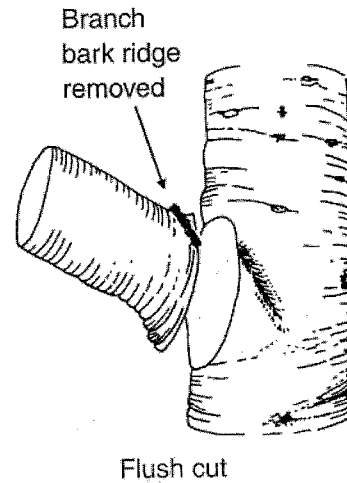


Fig. 7.1.9
A flush-cut, not an acceptable practice

7.2.1 A branch removal cut shall be made without cutting into the **branch bark ridge** or **branch collar**, or leaving a stub (see Fig. 7.2.1).

7.2.1.1 When a branch collar is not apparent, the cut shall be made without cutting into the branch bark ridge, **parent stem**, or leaving a stub (see Fig. 7.2.2.1).

7.3 Reduction cuts (see subclause 10.39 and Annex A – *Pruning cut guideline*)

7.3.1 A reduction cut should be made to a live lateral branch or codominant stem when it can be expected to sustain the remaining branch or stem.

7.3.2 The remaining lateral branch should typically be at least one-third the diameter of the stem or branch being removed.

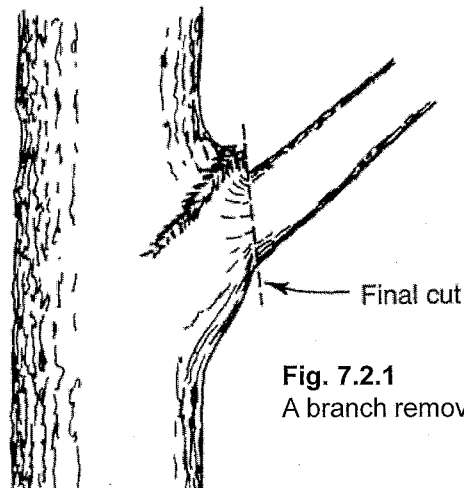
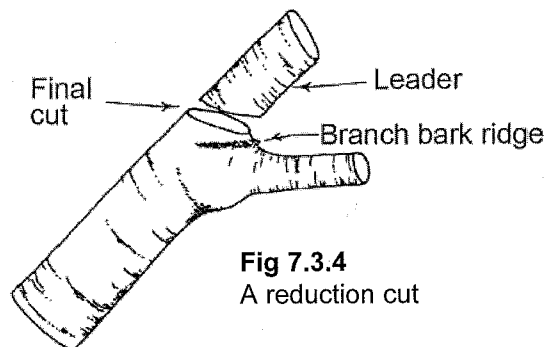
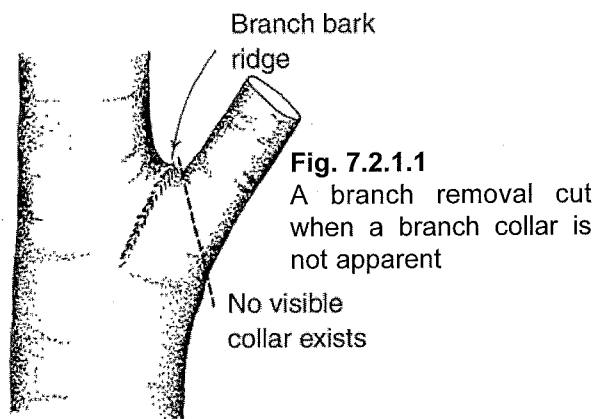


Fig. 7.2.1
A branch removal cut



7.3.3 A reduction cut should be made at a slight angle to the remaining branch or codominant stem, without damaging the branch bark ridge and without leaving a stub (see Fig. 7.3.4).

7.4 Heading cuts

7.4.1 A heading cut should only be made when necessary to conform with certain pruning systems (e.g. Initiation of a pollarding system, topiary pruning), or to accomplish specific pruning objectives, such as:

- **Structural development** on young plants;
- Mitigating risk, where reduction to a suitable lateral branch is not practical, where no such branch is present, or where cutting to such a branch does not achieve the objective;
- **Restoration** of damaged plants;
- **Rejuvenation** of shrubs;
- To avoid making an unnecessarily large branch removal cut where an appropriate lateral branch is not present; and,
- Conserving or creating wildlife habitat.

7.4.2 A heading cut should only be made when it can be expected that the remaining lateral(s) or shoots that grow from retained buds are able to sustain the remaining branch.

7.5 Shearing cuts

7.5.1 Shearing should be performed when necessary to accomplish specified objectives within the topiary system (see subclause 5.4).

7.5.2 Shearing should be performed on appropriate species at intervals that minimize deleterious effects on plant health.

7.5.2.1 Shearing cuts should only be made to stems capable of generating new shoots.

7.5.3 Reduction cuts should be considered after shearing when necessary.

8 Pruning practices

8.1 Inspection

8.1.1 In addition to required safety procedures, an arborist or qualified professional should conduct a visual inspection of the plant(s) to identify conditions that would affect the original scope of work.

8.1.2 Conditions identified in the visual inspection that would affect, or are outside of, the scope of work should be reported to an immediate supervisor or to the **client**.

8.1.2.1 When the scope of work is limited by property boundaries, easements, or other constraints, inspection of plants or parts of plants outside of the assigned scope of work shall not be required.

8.2 Work Practices

8.2.1 Equipment and tools used in pruning operations shall be maintained according to manufacturers recommendations.

8.2.2 Work practices that damage living tissue, other plants or property, beyond the scope of normal work practices, shall be avoided.

8.2.2.1 Where necessary to avoid damage or injury to other parts of the tree, people, or property, rig-

ging or other equipment shall be used to control and lower heavy plant parts to the ground.

8.2.2.2 Climbing spurs shall not be used when entering and climbing trees for the purpose of pruning or other tree maintenance, except in situations where other means are impractical, such as:

- Remote/rural utility rights-of-way;
- 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 or cambium; and,
- Emergency operations (see subclause 8.10).

8.2.3 Cut or detached branches shall be removed from the **crown** upon completion of pruning, at times when the tree would be left unattended, or at the end of the workday, unless otherwise specified in the scope of work.

8.2.4 When pruning has a high potential to spread pests, appropriate precautions should be taken (see Annex A – *Pruning cut guideline* and ANSI A300 Part 10, *Integrated Pest Management*).

8.2.5 When pruning has a high potential to result in sunscald, a temporary protective covering for vulnerable areas of bark should be considered.

8.3 Wound treatment

8.3.1 Wound treatments should be used only when necessary to prevent the spread of pests or for other specified reasons.

8.3.2 Wound treatments that damage the plant shall not be used.

8.3.3 When treating damaged bark, only loose or damaged tissue shall be removed.

8.4 Clearance pruning

8.4.1 Branches growing toward specified **clearance areas** should be reduced to lateral branches or removed to parent stems growing outside and/or away from the clearance area (see subclause 10.15 directional pruning).

8.4.2 When a minimum clearance distance is required, a branch removal or reduction cut should be made beyond the specified clearance distance at

a suitable branch **union**.

8.4.2.1 When a reduction cut cannot be made to a suitable lateral branch, and to avoid an unnecessarily large pruning cut at the parent stem, a heading cut should be considered.

8.4.3 When frequent or excessive pruning is required to achieve objectives due to species, growth habit and/or location, alternatives such as relocation, treatment with growth regulators, or removal and replacement with an appropriate plant, should be considered.

8.5 Mechanical pruning

8.5.1 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 stem wounding.

8.5.2 Mechanical pruning shall only be performed in **remote/rural locations**, away from settled areas and dwellings, or during emergency situations.

8.6 Topping

Reduction of tree size by cutting to stubs without regard for long-term tree health or structural integrity, shall be considered an unacceptable practice.

8.7 Lion tailing

When pruning trees using the natural system, the removal of interior lateral branches that results in a concentration of growth at branch ends shall be considered an unacceptable practice.

8.8 Disposal and/or repurposing

8.8.1 A method for disposal of pruning debris should be specified (see Annex E – *Urban forest products chart*).

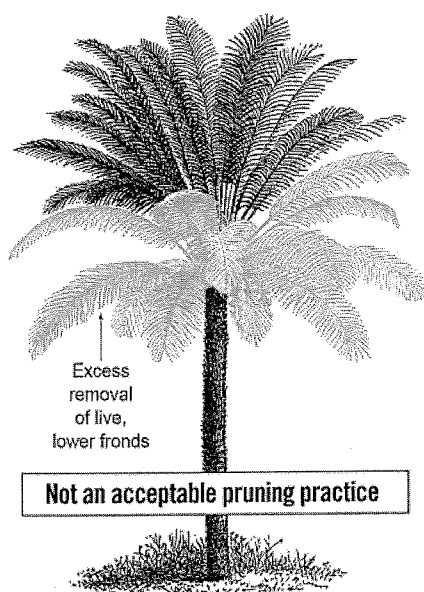
8.8.2 Disposal of pruning debris shall comply with applicable regulations, including quarantines.

8.8.3 Repurposing of debris should be preferred (eg. creating mulch, firewood, wood products, etc.).

8.9 Monitoring and pruning interval

8.9.1 A monitoring and/or a pruning interval should be recommended, and should be based on

Fig. 9.6
An overpruned palm



the objectives, pruning system, plant health, site/location, species, and growth rate (see ANSI A300 Part 7 *Integrated Vegetation Management* and ANSI A300 Part 10 *Integrated Pest Management*).

8.10 Emergency operations

Exemptions to the non-safety related sections of this standard shall be allowed during emergencies, including those declared by federal, state or local governments, utilities or other critical-service providers, when services must be restored.

8.10.1 Following the emergency, restoration pruning should be considered.

9 Pruning palms and similar plants

9.1 Dead, damaged, or loose fronds should be pruned when necessary to reduce risk or improve aesthetics.

9.2 Healthy fronds should not be removed other than to provide clearance.

9.3 Fruits that pose unacceptable risk or nuisance, or flowers that will lead to the development of such fruits, should be removed.

9.4 Palms that could grow into and damage or interfere with electric utility or other infrastructure

should be pruned, treated with growth regulators, relocated, or removed (see subclause 8.4.3).

9.5 Yellowing fronds that are not diseased or infested should be retained, except when they pose safety or aesthetic concerns.

9.5.1 Diseased or infested palms should be treated, or fronds removed, when necessary to reduce the spread of pests and/or to protect the health of the palm (see ANSI A300 Part 10, *Integrated Pest Management*).

9.6 If all or most fronds are damaged (e.g. following high winds or frost), damaged green fronds that do not pose unacceptable risk should be retained until new fronds develop (see Fig. 9.6). This is not an acceptable pruning practice.

9.7 Fronds should be removed by making a cut close to the **petiole** base without damaging living trunk tissue.

9.7.1 To ensure worker safety, removal of **palm frond skirts** shall be performed from the top down (see ANSI Z133, *Arboricultural Safety*).

9.7.2 When removing dead petiole bases (skinning, peeling, shaving), living trunk tissue should not be damaged.

9.8 When palm pruning practices have a high potential to spread pests, appropriate precautions shall be taken.

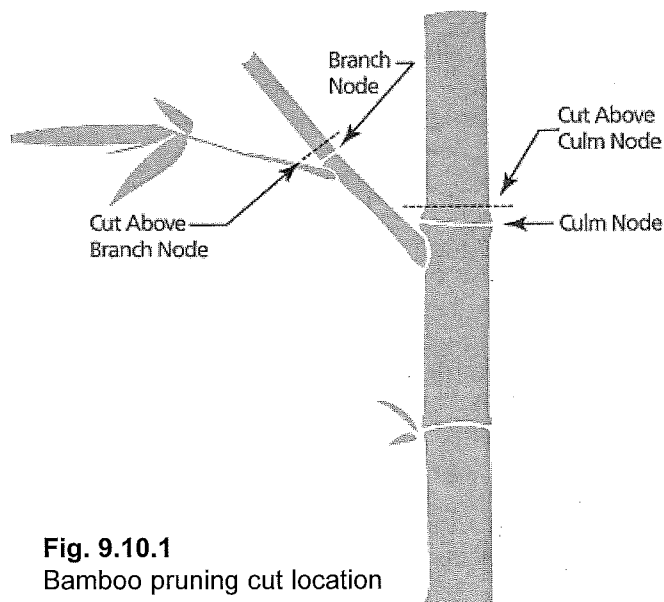


Fig. 9.10.1
Bamboo pruning cut location

9.8.1 Climbing spurs should not be used to climb live palms.

9.9 Disposal of debris should be specified per subclause 8.8 Disposal and/or repurposing.

9.10 Bamboo

9.10.1 Culms and branches shall be pruned by making cuts just above **nodes**, without leaving a stub (see Fig. 9.10.1).

10 Definitions This clause is part of the ANSI A300 (Part 1)-2017 standard.

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

10.2 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.

10.3 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.

10.4 branch: A shoot or stem arising from another branch or stem (see Fig. 10.4).

10.4.1 codominant stem/codominant branch: Two or more stems or branches of similar diameter originating from the same union (see Fig. 10.4.1).

10.4.2 lateral branch: A shoot or stem growing from a larger (parent) branch (see Fig. 10.4).

10.4.3 parent stem/branch: A tree trunk, main stem, **leader** or branch from which other smaller branches grow (see Fig. 10.4).

10.5 branch bark ridge: The raised strip of bark on the top and side of a union where the branch and parent stem meet. (see Fig. 7.2.1).

10.6 branch collar: The area of swelling at the union between a parent stem and a smaller branch.

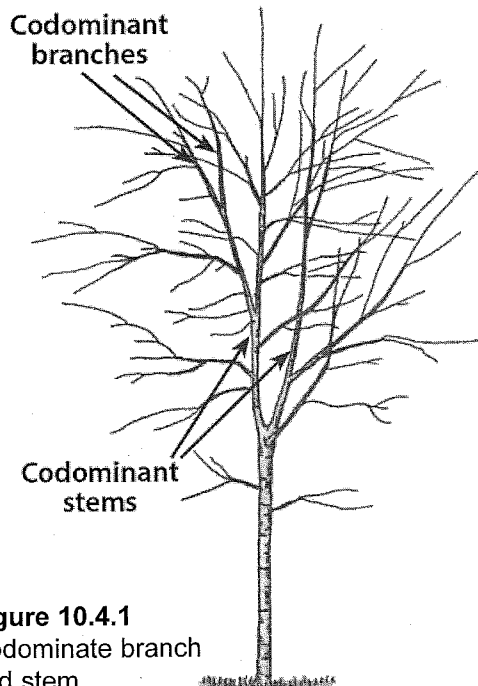


Figure 10.4.1
Codominate branch and stem

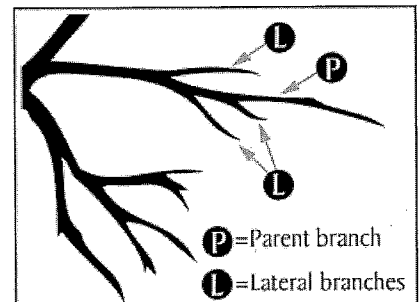
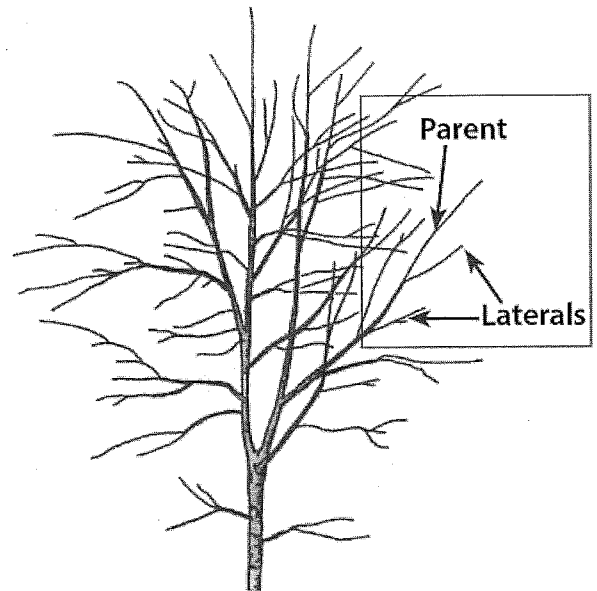


Figure 10.4
Standard branch definitions

- 10.7 cambium:** Meristematic tissue that gives rise to xylem, phloem and new cambium.
- 10.8 clean:** Arboricultural term used to describe selective pruning to remove one or more of the following: dead, diseased, infested, rubbing, declining, detached and/or broken branches.
- 10.9 clearance area:** specified area from which vegetation is to be removed.
- 10.10 client:** a person, corporation, or other entity who has hired the qualified professional.
- 10.11 climbing spurs:** Sharp, pointed devices strapped to a climber's lower legs used to assist in climbing trees (syn.: gaffs, hooks, spurs, spikes, climbers).
- 10.12 crown:** The part of a tree or shrub, measured from the lowest branch upward, including all the branches and foliage.
- 10.13 culm:** the stem of a grass or sedge, including, for the purposes of this standard, the woody, hollow aerial stem of bamboo.
- 10.14 decay:** The degradation of woody tissue caused by microorganisms.
- 10.15 directional pruning:** Selective removal of branches to guide and/or discourage growth in a particular direction.
- 10.16 espalier:** A pruning system that trains plants to grow within a plane, such as along a wall, trellis or fence.
- 10.17 flush cut:** A pruning cut that removes the branch bark ridge and/or branch collar, damaging the trunk or **parent branch**. (see Fig. 7.1.9).
- 10.18 frond:** A leaf of a palm.
- 10.19 heading:** Pruning cut that removes a branch or stem between nodes (leaving a stub), to a bud, or to a live branch typically less than one-third the diameter of the branch or stem being removed.
- 10.20 leader:** A main trunk or stem that dominates all or a portion of the crown. Trees and shrubs may have one leader or several individual leaders.
- 10.21 line of sight:** The line of vision to a specific view element (syn. sightline).
- 10.22 lion tailing:** The use of branch removal cuts to remove interior lateral branches, resulting in a concentration of growth at branch ends.
- 10.23 mechanical pruning:** Pruning with heavy equipment (not hand-held) fitted with power saws or other cutting devices (e.g. saws mounted on booms or suspended from a helicopter).
- 10.24 natural (pruning system):** A pruning system intended to maintain the tree's characteristic growth pattern and adaptations.
- 10.25 node:** Slightly enlarged portion of a stem (or branch) where shoots arise.
- 10.26 palm:** Monocotyledonous plant of the *Aracaceae* family, generally with one or more unbranched trunks, with fronds emanating from a meristem at the top of the trunk.
- 10.27 palm frond skirt:** One or more year's accumulation of dead and drooping fronds at the bottom of the canopy and along the trunk.
- 10.28 petiole:** The stalk of a leaf or frond.
- 10.29 planary form:** Shape that conforms to a geometric plane.
- 10.30 pleaching:** Pruning system that trains one or more plants to achieve a desired shape or form through a combination of pruning and interweaving or tying small branches to one another, or to a pre-formed frame.
- 10.31 pollard head:** Response growth that forms a knob or swelling at sprout removal sites on trees maintained within a pollarding pruning system.
- 10.32 pollarding:** A pruning system that maintains crown size by initial heading of branches on young trees, followed by removal of shoots to their point of origin at appropriate intervals without disturbing the resulting pollard head.
- 10.33 pruning:** The selective removal of plant parts to achieve defined objectives.
- 10.34 pruning amount:** Quantity of plant parts removed at one pruning, expressed in terms of a number of branches or other parts removed, and/

or percentage of the crown or buds removed on an entire tree or specific branches.

10.35 pruning system: Process used to achieve the desired long-term form of the plant.

10.36 qualified professional: An individual who, by reason of training and experience, has demonstrated the ability to safely and effectively perform assignments, and, where required, is properly credentialed in accordance with federal, state or local laws and regulations.

10.37 raising: Arboricultural term referring to pruning of branches to provide vertical clearance below the crown.

10.38 reduction: Arboricultural term referring to decreasing branch length, or plant height and/or spread.

10.39 reduction cut: A pruning cut that removes the larger of two or more branches or stems, or one or more codominant stem(s), to a live lateral branch, typically at least one-third the diameter of the stem or branch being removed.

10.40 rejuvenation: Removal of overmature, dead or dying stems of a shrub, near the ground, to stimulate new stem development.

10.41 remote/rural location: Undeveloped or sparsely populated area including areas of agricultural and forest land, not in direct association with dwellings or development.

10.42 removal cut, branch: A pruning cut that removes the smaller of two branches at a union, or a parent stem, without cutting into the branch bark ridge or branch collar, or leaving a stub.

10.43 restoration: Pruning to redevelop structure, form, and appearance of topped or damaged woody plants.

10.44 risk: The combination of the likelihood of an event (e.g. tree failure and impact to a target) and the severity of the potential consequences (e.g. personal injury, property damage, or disruption of activities).

10.45 shall: As used in this standard, denotes a mandatory requirement.

10.46 shearing: Cutting leaves, shoots and branches to a desired plane, shape or form, using tools designed for that purpose, as with topiary.

10.47 shoot: New stem or branch growth.

10.48 should: As used in this standard, denotes an advisory recommendation.

10.49 shrub: Woody perennial plant, usually with several stems that may be erect or close to the ground, generally smaller than a tree.

10.50 specifications: A document stating a detailed, measurable plan or proposal for provision of a product or service.

10.51 standard, ANSI A300: Industry consensus standards for the professional management of trees, shrubs and other woody plants that serve as the foundation for work specifications, training materials, quality protocols, and regulations for the management of trees, shrubs, palms, and other woody plants.

10.52 stem: A dominant leader or branch bearing buds, foliage, and giving rise to other branches and stems.

10.53 structural development pruning: Pruning to influence the orientation, spacing, growth rate, strength of attachment, and ultimate size of branches and stems.

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

10.55 subordination: The removal of the end of a branch or stem to reduce leaf surface area, and to slow its growth relative to its parent, or to other branches or stems.

10.56 sucker: Vigorous upright epicormic shoot that arises from latent buds below soil level or the graft union.

10.57 target: People, property, or activities that could be injured, damaged, or disrupted by the failure of a tree or tree parts (see ANSI A300 Part 9, *Tree Risk Assessment*).

10.58 thinning: An arboriculture term used to describe selective pruning to reduce density of branches and foliage.

10.59 topiary: Pruning system that uses a combination of pruning, supporting, and training branches to orient a plant into a desired shape.

10.60 topping: Reduction of tree size by cutting live branches and leaders to stubs, without regard to long-term tree health or structural integrity.

10.61 tracing: The removal of loose, damaged tissue from in and around a wound.

10.62 tree: A woody perennial plant with a single or multiple trunks, which typically develop a mature size of over several inches diameter, and 10 or more feet in height.

10.63 trunk: The main or primary stem or stems of a tree.

10.64 union: Junction of branches, stems, or leaders.

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

10.66 vine: A woody perennial plant that typically lies along the ground, or that rises above the ground by attaching to other plants or objects with tendrils or by twining.

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