Contents

Foreword
1 ANSI A300 Standards – Scope, purpose, and application
80 Part 8 – Root Management standards
81 Normative references
82 Inspection
83 Objectives
84 Specifications
85 Practices
86 Root management care
87 Post-root management care
88 Definitions

Annex A – Alternatives to root cutting and pruning
Annex B – Managing trees to mitigate root damage or loss
Annex C – Managing roots in fill
Annex D – Managing trunks, flares, and roots affected by fill, sample specifications
Foreword

This foreword will not be considered part of the revised will not be part of the revised A300 (Part 8)-20xx standard.

ANSI A300 standards are intended to guide work practices for the care of trees, palms, shrubs, and other woody landscape plants. They apply to arborists, horticulturists, landscape architects, and other professionals who provide for or supervise the management of these plants for property owners, property managers, businesses, government agencies, utilities, and others who use these services. The standard does not apply to agriculture, horticultural production, or silviculture, except where explicitly noted otherwise.

These standards should be used to develop specifications for work assignments; however, they are not intended to be used as work specifications in and of themselves. Effective specifications must include measurable criteria, and must account for the variable characteristics of landscape plants and the individual management objectives of their owners.

The Tree Care Industry Association (TCIA) oversees the Accredited Standards Committee (ASC) on Tree, Shrub, and Other Woody Plant Management Operations – Standard Practices, A300 (ASC A300), which writes the ANSI A300 Standards. TCIA is an ANSI-accredited Standards Developing Organization (SDO), and is secretariat of the ANSI A300 standards. ANSI requires that approved standards be developed according to accepted principles, and that they be reviewed and, if necessary, revised every five years.

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.

Since 1991, ASC A300 has met 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.

ANSI A300 Standards are divided into multiple parts, each focusing on a specific aspect of woody plant management (e.g. Pruning, Soil Management, Supplemental Support Systems, etc.). The ANSI A300 standards unify and take authoritative precedence over all previously existing tree care industry standards.

This draft is a public review document. The public review period starts on XXX, and ends on XXX This document is not approved as a draft for trial use.

How to file a public review comment: Official public comments must be entered on the TCIA website portal at www.tcia.org/A300comments before the deadline of 11:59 PM Eastern Standard Time (EST) XXX in order to be considered, no exceptions will be made for late comments. You will be asked to register to gain access. Responses to official comments will be provided. Comments may be forwarded to ASC A300 members and/or the TCIA secretary, however comments that are forwarded to ASC A300 members or the TCIA Secretary and are not entered online will not be recorded as official comments and a response will not be provided. If you require an official response, you must post your comments on the TCIA website portal.

Information requests regarding this document must be forwarded to: rouse@tcia.org, A300 Secretary, c/o Tree Care Industry Association, Inc.670 N. Commercial St. Suite 201 Manchester NH 03101.

Tim Bushnell, Chair (Sherrill Tree)
Wayne Dubin, Vice-Chair (Bartlett Tree Expert Company)
Bob Rouse, Secretary (Tree Care Industry Association, Inc.)
Amy Tetreault, Assistant Secretary (Tree Care Industry Association, Inc.)

© Tree Care Industry Association, Inc. All rights reserved
Organizations Represented
AmericanHort (formerly ANLA)
American Society of Consulting Arborists

American Society of Landscape Architects
Asplundh Tree Expert Company
Bartlett Tree Expert Company

Davey Tree Expert Company

International Society of Arboriculture
Professional Grounds Management Society

National Association of Landscape Professionals
(formerly PLANET)
Society of Commercial Arborists

Society of Municipal Arborists

Tree Care Industry Association

Tree Care Industry Association
– Associate Members (Vendors)

USDA Forest Service
Utility Arborist Association

Additional organizations and individuals:
Dane Buell (Observer)
Myron Laible (Observer)
Matthew Simons (Observer)
William Rees (Observer)

ASC A300 Part 8 Subgroup Chair:
Rich Hauer

Mission: To develop consensus performance standards for the professional management of trees, shrubs and other woody plants.

Vision: ANSI A300 standards will be the foundation for work specifications, training materials, quality protocols, and regulations for the management of trees, shrubs, palms, and other woody landscape plants.
Subclauses 1.1 to 1.3 excerpted from ANSI A300 (Part 1)-2017 *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 A – *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 agriculture, horticultural production, or silviculture unless this standard, or a portion thereof, is expressly referenced in other standards or specifications.

80 Part 8 – Root Management Standards

80.1 Purpose

The purpose of this document is to present standards for root management and guidelines for developing specifications, best practices, training materials, and regulations.

80.2 Reasons

Root management is done to inspect for a buried trunk, flare, root collar, or roots; selectively prune roots; non-selectively cut roots; and/or to direct or redirect root growth.

The reasons for root management may include promoting tree health, stability, and longevity, and managing the interaction of tree roots with infrastructure, property, and other plants.

Root management practices for agriculture, horticultural production, or silvicultural purposes are exempt from this standard unless this standard, or a portion thereof, is expressly referenced in these standards for these other related areas.

80.3 Implementation

80.3.1 Root management specifications should be written and administered by an arborist or other qualified professional familiar with the practices and hazards associated with root management and the equipment used in such operations.
80.3.2 Practices that minimize damage to roots shall be preferred (see Annex A).

80.4 Safety

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

80.4.2 Personnel shall follow appropriate safe work practices.

80.4.3 Performance shall comply with applicable Federal and State Occupational Safety and Health Administration (OSHA) standards, ANSI Z133, and other federal, state, and local regulations.

80.4.4 The site shall be inspected for visible aboveground hazards prior to beginning any root management procedure.

80.4.5 The location of utilities and other obstructions both below and above ground shall be considered prior to root management operations. Utilities and other obstructions include but are not limited to: gas; electric; communications; sewer; drainage; and, signage.

80.4.6 Job briefings shall be performed as outlined in ANSI Z133.

80.4.7 The tree owner or owner’s agent should be notified of likely impact to tree health and stability.

81 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 stock²
ANSI Z117.1, Safety Requirements for Confined Spaces
ANSI Z133, Arboriculture – Safety Requirements³
BS3998, Tree Work—Recommendations BSI British Standards Publication
29 CFR 1910, General industry
29 CFR 1910.268, Telecommunications
29 CFR 1910.269, Electric power generation, transmission and distribution
29 CFR 1910.331 - 335, Electrical safety-related work practices

¹ Available from the Tree Care Industry Association, www.tcia.org
² Available from AmericanHort, www.americanhort.org
⁵ Available from U.S. Department of Labor, 200 Constitution Ave., NW, Washington, DC 20210 or www.osha.gov

82 Inspection

82.1 The tree and site shall be inspected prior to developing root management objectives and specifications.
83 Objectives

83.1 Root management practices should include, but are not limited to, one or more of the following:
- Inspection of a burried trunk, flare, root collar, or roots;
- Selective root pruning;
- Non-selective root cutting; and,
- Directing or redirecting root growth.

83.2 Root management objectives shall be established with the owner or owner’s agent.
83.3 Root management objectives should include, but are not limited to, one or more of the following:
- Locating and inspecting the trunk and/or roots;
- Identifying and correcting tree health issues;
- Preventing, minimizing, or mitigating infrastructure interference and/or damage;
- Preventing or correcting root system defects;
- Preventing and/or mitigating damage to the trunk or roots during construction;
- Protecting roots from mechanical damage; and
- Managing other uses of the area.

83.4 When establishing root management objectives, the arborist shall consider the likelihood of post-treatment tree decline and destabilization.

83.5 When establishing root management objectives, the arborist should consider:
- Potential benefits,
- The intended use of the site,
- Regulations,
- Site conditions (e.g., topography; soil quality, volume, moisture),
- Distance to infrastructure,
- Species characteristics and tolerance,
- Environmental factors,
- Timing of treatment, and
- Tree age and condition (i.e., health, structure, form).

84 Specifications

84.1 Specifications shall be defined.

84.2 Specifications should be provided to the client.

84.3 Specifications should include:
- Location of the tree,
- Objective,
- Method of root management,
- Details of root management method,
  - Depth of excavation,
  - Location of excavation/cuts,
  - Type of root cuts (i.e., selective or nonselective),
  - Changes in grade,
- Tools and equipment to be used,
- Time frame for work implementation,
- Post-root management care,
  - Type of inspections and treatments,
  - Inspection interval and duration,
- Other information as necessary.
85. Practices

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

85.2 Root pruning tools shall be selected to meet the objective while minimizing damage to the plant.

85.3 Tools used shall be maintained according to manufacturer’s recommendations.

85.4 Before conducting the work, the working arborist should conduct a visual inspection of the tree and site to identify conditions that would affect the scope of work.

85.5 Conditions identified that would affect, or are outside of, the scope of work should be reported to a supervisor or to the client.

85.6 Wounds should not be covered, except to manage dessication or pests.

85.7 Cuts should result in a smooth surface whenever possible.

85.8 When treating injured roots, only loose or damaged tissue should be removed.

86 Root Management Methods

86.1 Trunk, flare, and/or root inspection

86.1.1 Inspection should include, but is not limited to, one or more of the following:
- Root location;
- Soil against the trunk and root collar;
- Girdling of the root collar or stems by roots or other materials;
- Decay or damage;
- Pests;
- Response growth;
- Graft unions.

86.1.2 Mulch, soil, hardscape, and other materials should be removed as needed to allow for the inspection.

86.1.3 Small adventitious roots that interfere with excavation or examination should be moved or pruned.

86.1.4 Adventitious roots should be considered for retention.

86.1.5 Temporary protection of newly exposed roots and stem tissue shall be considered to protect against desiccation and pests.

86.1.6 Post-root management treatment should be recommended based on the diagnosis (section on post-treatment care).

86.1.7 If significant structural defects are observed, a risk assessment should be recommended, see ANSI A300 Part 9 – Tree Risk Assessment.

86.1.8 The root collar should remain visible after inspection. (see A300 Part 5 and ANSI Z60.1)

86.2 Root pruning and root cutting
86.2.1 When mitigating or avoiding infrastructure damage, only roots causing or likely to cause damage should be pruned.

86.2.2 When root removal is unavoidable, selective pruning shall be the preferred method.

86.3 Root pruning (selective)

86.3.1 Roots should be exposed using minimally damaging excavation method prior to pruning.

86.3.2 A pruning cut that removes a root at its point of origin should not cut into the trunk or parent root.

86.3.3 The pruning cut should be the smallest diameter that meets the objective.

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

86.4 Root cutting (non-selective)

86.4.1 When non-selective root cutting is necessary, roots shall be cut as far from the trunk as practical.

86.4.2 Minimum distance from the trunk for root cutting should be adjusted according to trunk diameter, species tolerance to root loss, tree age, health, and site condition (see Part 5, Management).

86.4.3 Root cutting distances from the trunk shall be adjusted for disease management, root location, tree species and condition, and, site and soil conditions.

86.4.4 Roots should be cut with equipment that minimizes cracking the wood and tearing the bark.

86.4.5 Heavy equipment should be located outside the root cut line or remain on existing pavement or on a soil-protecting surface.

86.4.6 Temporary staging areas for excavated soil should be located at a safe distance on the side of the trench furthest from the trunk.

86.4.7 Upon completion of non-selective root cutting, damaged roots should be pruned in accordance with subclause 83.3 where practical.

86.5 Girdling roots and other materials.

86.5.1 Roots or other materials that encircle or girdle the trunk or a buttress root should be considered for redirecting or removal.

86.5.2 Girdling roots and material targeted for removal should be exposed before cuts are made.

86.5.4 Encircling or girdling root providing more benefit than damage or potential damage should be retained.

86.5.5 The trunk and buttress roots shall not be unnecessarily damaged.

86.5.6 If one or more large girdling roots are present, progressive root pruning over a specified period should be considered.

86.6 Managing the direction of root growth

86.6.1 Root redirection methods shall include, but are not limited to, one or more of the following:
- Installing, and/or maintaining root barriers,
- Installing, and/or maintaining root channels,
• Removing or mitigating impermeable surfaces above the roots,
• Penetrating or mitigating impermeable layers below the roots,
• Directing adventitious roots that arise from stem or branch tissue to suitable conditions,
• Directing circling or girdling roots in a radial direction, and
• Covering or treating surface roots.

86.6.2 Managing the direction of root growth shall be preferred over root pruning or cutting.

86.6.3 Managing the direction of root growth shall be considered following root pruning.

86.6.4 Use and installation of root management devices should follow manufacturer’s recommendations.

86.6.5 Root barriers should be installed as far from tree trunks as possible.

86.6.6 Roots that grow over the root barrier should be pruned on the tree trunk side of the barrier.

86.6.7 Surface roots should be managed by removing or replacing or reducing soil density in accordance with ANSI A300 Part 2 – Soil Management or raising the grade with porous soil, sand, or mulch to meet the objective.

87 Post-root management care

87.1 Recommendations for post-root management inspection and treatment for tree health and stability should be made to the client.

87.2 Recommendations should be based on type of root management and tree and site conditions.

87.3 Recommendations for monitoring and treatment should include:
  • Type of inspections,
  • Inspection frequency and duration,
  • Type of treatments.

87.4 Recommendations for the type of post-root management care should consist of, but are not limited to, one or more of the following practices (see applicable A300 standards):
  • Risk assessment and management;
  • Soil moisture management;
  • Mulching;
  • Integrated pest management;
  • Pruning;
  • Soil management;
  • Installation/maintenance/removal of tree support systems;
  • Lightning protection and,
  • Application of growth regulators, fertilizers and/or biological soil treatments.

87.5 Scheduling inspections and treatments shall be the responsibility of the tree owner.

88 Definitions (Definitions will be considered part of the ANSI A300 Part 8-20xx standard when approved.)

88.1 adventitious root: Root arising from parts of a root, branch, or stem.

88.2 aggregate: Materials such as sand, gravel, or rock, often used under paved surfaces, as backfill, or for other purposes.
88.3 **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 ornamentals.

88.4 **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 woody plants. Such trainees shall be under the direct supervision of an arborist.

88.5 **berm**: Soil added above grade for a specified purpose, such as a planting bed or barrier.

88.6 **buttress**: Portion of the flare that projects outward from the lower trunk.

88.7 **callus**: Undifferentiated, non-lignified tissue, usually developed in response to wounding.

88.8 **canker**: Localized diseased area on stems, roots, and branches. Often shrunken and discolored.

88.9 **crown**: Upper part of a tree, measured from the lowest branch, including all the branches and foliage (see ANSI A300 Part 5).

88.9 **decay**: (v.) Decomposition of woody tissues by microorganisms. (n.) Wood that is decomposed.

88.10 **defect**: A condition that may increase the risk of failure (see ANSI A300 Part 9).

88.11 **fill**: 1. Soil, sand, gravel, rocks or other material placed over the existing soil surface to raise the finished grade (see ANSI A300 Part 2).

88.11 **flare (trunk flare, root flare)**: 1. The area at the base of the plant’s stem or trunk where the stem or trunk broadens to form roots (see ANSI A300 Part 6).

88.12 **hardscape**: Built infrastructure such as pavement, sidewalks, curbing, storm drains, walls, and footings.

88.13 **impermeable layer**: Soil layers that fully or partially restrict water, air movement, and/or root growth, such as hardpans, plow pans, rock, abrupt textural changes, or retaining walls.

88.14 **infrastructure**: Inert material such as pavement, sidewalks, curbing, storm drains, walls, and footings.

88.15 **layering**: The growth of roots from branch tissue in contact with the soil.

88.16 **mitigation**: 1. Improving or alleviating unfavorable conditions. 2. The process of diminishing risk (ANSI A300 Part 9).

88.17 **mulch**: A material applied to the soil surface to protect the soil, deter erosion, moderate soil temperature, conserve moisture, inhibit weeds or improve soil structure (see ANSI A300 Part 2).

88.18 **pest**: Living organism including animal, insect, mite, fungus, bacteria, virus, nematode, or undesirable plants that interfere with or threaten plant health or aesthetics.

88.19 **qualified professional**: An individual possessing skills, experience, training, education, certificates, degrees, registration, certification, or licensing as needed to perform job tasks.

88.20 **root barrier**: A device designed to direct root growth.

88.21 **root channel**: An underground system used to direct root growth and increase soil volume.
88.22 root collar: The transition zone between the flare and the root system

88.23 root collar examination: The process of exposing and assessing the root collar.

88.24 root cutting: Severing roots non-selectively.

88.25 root pruning: Severing roots selectively.

88.26 root, buttress: A major lateral root radiating from the base of the trunk.

88.27 root, circling: A root that encircles all or a portion of a trunk but does not contact it.

88.28 root, girdling: A root that encircles all or a portion of a trunk and contacts the trunk or a buttress root.

88.29 root, surface: A lateral root that is visible above grade.

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

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

88.32 soil volume: The volume of soil available to trees and other woody plants that is available for root development (ANSI A300 Part 2).

88.33 specifications: A detailed, measurable plan or proposal for performing a work activity or providing a product; usually a written document.

88.34 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.

88.35 stem: A woody structure bearing buds, foliage, and giving rise to other stems or branches (see ANSI A300 Part 1).

88.36 tracing: The removal of loose, damaged tissue from in and around the wound (see ANSI A300 Part 1).

88.37 utilities: Facilities associated with services such as telephone, data, CATV, electricity, gas, steam, energy transmission and distribution, water and sewage, and transportation.

88.38 wood-chip mulch: A material placed on the soil surface composed of ground wood, bark, and leaves usually generated by sending tree parts through a wood chipping machine (see ANSI A300 Part 2).

88.39 wound: Damage to plant tissue caused by pests, pruning, mechanical damage, or other natural forces. (Pruning is not natural, nor is most mechanical damage)
Annex A – Alternatives to root pruning and cutting (This annex will not be considered part of the ANSI A300 Part 8-20xx standard when approved.)

A-1 Alternatives to root pruning and cutting may include, but are not limited to:
   Changing project design;
   Tunneling around or beneath roots;
   Re-routing utilities lines away from roots;
   Tree grates;
   Bridging over roots;
   Discontinuous footings for retaining walls, footings, and foundations;
   Ramping sidewalks;
   Using flexible paving materials or shallower sections;
   Using permeable paving materials;
   Enlarging tree wells (cut-outs) or converting them to open retaining walls;
   Reducing sidewalk width;
   Relocating pavement;
   Increasing the thickness of the pavement;
   Reinforcing with rods or under-laying it with a geotextile fabric;
   Use of geogrids or other ‘no-dig’ pavement systems;
   Using a coarse aggregate under sidewalks;
   Supporting pavement on piers; and,
   Covering surface-roots with soil or mulch.
Annex B – Managing trees to mitigate root damage or loss (This annex will not be considered part of the ANSI A300 Part 8-20xx standard when approved.)

B-1 Define objectives for management of trees with root damage or loss prior to beginning operations.

B-2 Objectives include, but are not limited to one or more of the following:
   To improve stability;
   To minimize drought stress and pest problems; and,
   To create conditions favorable for root regeneration and growth.

B-3 Specify follow-up care for trees and shrubs sustaining root loss.

B-4 Monitor trees sustaining root loss for symptoms of stress or decline for a specified period.

B-5 Irrigate prior to, during, and after root pruning.

B-7 Consider supporting, reducing, or thinning woody plants when stability of a root-pruned tree has been significantly decreased.

B-8 Consider applying a 2- to 4-inch (5-10 cm) layer of organic mulch. Do not let mulch contact the flare or trunk.

B-9 Newly exposed root zones should be protected with a root curtain extending the full height and width of the exposed area, secured with stakes every 3’ or less, backfilled with suitable soil, and left in place as long as needed.
Annex C – Managing roots in fill (This annex will not be considered part of the ANSI A300 Part 8-20xx standard when approved.)

C-1 Remove as much fill as possible without damaging roots outside the scope of work.

C-2 If adventitious roots need to be removed, specify the diameter or quantity according to tree species and condition, site factors, and whether they are needed.

C-3 Where fill is needed to raise the grade for a specific objective, provide for drainage, adequate air and water movement by modifying soil (see ANSI A300 Part 2) or by installing ventilation systems (see ANSI A300 Part 5).

C-4 Where needed to limit erosion and manage surface water movement, install retaining devices such as silt fences, bales, logs, branches, or berms, as required by regulations. Establish berms of a size and material to permit sufficient exchange of air with the soil. Ensure contact between retaining devices and the earth.

C-5 Design devices that provide for adequate air and water movement.
Annex D – Managing trunks, flares, and roots affected by fill, sample specifications (This annex will not be considered part of the ANSI A300 Part 8-20xx standard when approved.)

D-1 Sample specifications for root collar examination with hand tools

Scope: Trees with fill contacting the trunk.

Objective: Mitigate tree damage from the effects of fill on the trunk.

Specifications:

1. Rake any coarse woody debris or fresh mulch away from the root collar area.
2. Select tools to avoid root and trunk damage: hoe, shovel, trowel.
3. If a shovel or trowel is used, press the blade against the trunk. Slide it carefully downward until resistance is met.
4. Push the handle toward the trunk, moving the blade away from the trunk.
5. Remove individual adventitious roots and stem-girdling roots as needed. Manage larger roots per ANSI A300 (Part 8), 83.4 and 84.4. Avoid contact between the trunk and any remaining adventitious, girdling, and circling roots.
6. Lift the material away from the trunk and place it in a temporary staging area.
7. Repeat until trunk and flare are clear, out to the root collar, where buttress roots divide. Use smaller hand tools, vacuum, or compressed water or air, to complete the excavation.
8. Separate and dispose of any infertile soil and debris. Retain the fertile soil, fine roots, mycorrhizae, and decomposed mulch.
9. Commence the root collar examination.
10. When the tree is small or not yet established, and the root ball is of a size that permits the following operation, consider replanting the tree when the flare is over 2 inches (5 cm) below grade.
11. Remove soil and fine roots outside of the root collar to make a gradual slope.
12. Consider installing a device to control erosion.
13. Apply 2-4 inches (5-10 cm) of mulch over the root collar. Avoid mulch contact with the flare.
14. Remove the fine roots, fertile soil, mycorrhizae and decomposed mulch from the staging area.
15. Incorporate the material into the outer rootzone.
16. Specify that future management will keep the flare visible.

D-2 Sample specifications for root collar examination with pneumatic or hydraulic tools

1. Rake any coarse woody debris or fresh mulch away from the flare and root collar.
2. Select tools to avoid root and trunk damage.
3. Follow manufacturer’s recommendations.