Town of Brookline - Longwood Mall
Tree Inventory and Management Plan | 2025

Submitted by:
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MAKING THE MOST OF YOUR INVENTORY MANAGEMENT PLAN

Those who operate a large business or institution understand how inventory impacts operations and budgeting. One must know what's there, how much or how many, and where it all is. But the task doesn't end there. To obtain the greatest benefit from inventory, owners or their designees must manage it. Are a company's tools, for example, old and defective, in need of repair, in short supply, or useless and taking up space that could be better occupied? A good management plan will address these issues and keep the inventory current, in good condition, and functioning for the benefit and safety of those involved.

Managing trees on a large property can seem like an overwhelming task, but the same principles of inventory management apply. This inventory and management plan should provide managers the data they need to develop realistic budgets for their tree maintenance needs, and it will help make Longwood Mall a safer and more beautiful environment.

The following tips will assist you in making the most of this document:

Who's Who

Those who conducted the inventory and prepared this document are members of the Bartlett Consulting team. They are also employees of Bartlett Tree Experts. The Bartlett Consulting team is overseen by Consulting Advisors, strategically placed throughout the company footprint. The advisors are primarily charged with client support, coordination, quality control, and documentation of inventories and the related data. Extensively trained Consulting Arborists from local Bartlett Tree Experts offices are the primary data collectors and authors of the management plans. Readers may interpret the terms "Bartlett Tree Experts," "Bartlett," "the Inventory Team," "the team," "we," and "our" as the Bartlett company and those who conducted the inventory and prepared this management plan. In addition to the primary author(s) listed on the cover page, Team Member(s) involved in this project included:

Technical Advisor
Allan Fenner, Consulting Advisor
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Data Collection
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Subject Trees

In this document, the term "subject trees" refers (depending on context) to some or all of the 36 trees included in the inventory.

Definitions & Bolded Terms

Some definitions or specifications are detailed within a given section to explain how readers should interpret certain terms or classifications. We have also appended a Glossary for other terms that appear throughout the document. The first reference to each of these terms appears in **bold** for the reader's convenience.

How This Document is Organized

An outline appears below that introduces the order in which the sections of the management plan will appear. The management plan layout is as follows:

Table of Contents
- Road map for the management plan

Making the Most of Your Inventory Management Plan
- Explanations for how to efficiently and effectively understand and navigate this management plan document

Executive Summary
- Synopsis of the major findings and recommendations

Introduction
- Brief explanation of the inventory and what was included

Goals & Objectives
- Explanation of the specific goals and objectives for this inventory

Data Collection & Tree Inspection Methodology
- Lists, explanations, and definitions of all data collected during the inventory

Stand Dynamics Results
- Summary information for the entire tree population inventoried

Recommendations
- Summary of all recommendations made during the inventory including associated table and map displays, explanations and examples, and figures if applicable

Defects or Observations
- List of all trees observed to have defects in the field in a table view with associated descriptive figures and maps if applicable

Entire Inventory

- List of all trees collected in a table display

Additional Resources

- Listing of all appended items for this management plan

EXECUTIVE SUMMARY

In January 2025, the Bartlett Consulting Team from Bartlett Tree Experts conducted an inventory of trees at Longwood Mall. We identified 36 trees which included 1 species. The attributes that we collected include tree latitude and longitude, size, age and condition class, and a visual assessment of tree structure, health, and **vigor**.

We conducted the attribute collection using a sub-meter accuracy Global Navigation Satellite System (GNSS) receiver with an error-in-location potential of not greater than three meters. Our recommendations for the subject trees are based on the number of desired management cycles. All tree work activities will comply with current American National Standards Institute (ANSI) Z133.1 requirements for safety.

Soil Sampling
Taking soil samples throughout planting beds and actively managed areas. Soil analysis provides information on the presence of soil nutrients, pH, organic matter, and cation exchange capacity.

Bulk Density Sampling
Taking bulk density samples throughout planting beds and actively managed areas to determine the amount of soil compaction.

Mulching
Wherever possible, apply 2-4 inches of mulch within the root zone to help moderate soil temperatures, reduce soil moisture loss, reduce soil compaction, provide nutrients, improve soil structure, and keep mowers and string trimmers away from tree trunks. The best mulch materials are wood chips, bark nuggets, composted leaves, or pine needles. To avoid potential disease problems, mulch should not be placed directly against the trunk.

Root Collar Excavations
Perform **root collar** excavations to 4 trees (11%) to lower risk of damaging conditions such as **girdling roots**, basal cankers, masking of root decay and lower-stem decay, and predisposing trees to various insect and disease pests.

Plant Health Care (PHC)
Implement Bartlett's PHC program to monitor pests and diseases on the subject trees. Treatments are therapeutic and preventive, and treatment timing is based on pest life cycle.

Pruning
Prune 29 trees (81%) for safety, health, structure, and appearance. Pruning will comply with current ANSI A300 standard practices for pruning.

Structural Support
There are structural support system recommendations for 5 trees (14%) to reduce risk of branch or whole tree failure. All structural support systems will comply with current ANSI A300 standard practices for supplemental support systems.

Removals
Remove 1 tree (3%) due to condition or because of its location in relation to other trees to try and prevent competition or damage to infrastructure.

INTRODUCTION

In January 2025, the Town of Brookline retained Bartlett Tree Experts to perform an inventory of trees at Longwood Mall in Brookline, Massachusetts. Team member Kat Cummings visited the site on January 22 to conduct the inventory.

The inventory included:

identifying trees and assigning a Tree ID number (Tree ID numbers ranging from 1 to 36);
identifying the trees' condition, health, and vigor;
recommending removals of appropriate trees;
recommending tree care, soil care, structural support, and pest management treatments to promote tree safety, health, appearance, and longevity; and
mapping the trees using GNSS hardware and Geographic Information System (GIS) software, and Bartlett Tree Experts' ArborScope web-based management system

The methods and procedures we used to make the above determinations and recommendations are detailed in the following sections.

GOALS & OBJECTIVES

An effective management plan communicates clear goals and the specific objectives designed to carry out those goals. We intend "goal" to mean the overall aim or result we expect to achieve for the client in producing the inventory and management plan. The objectives are the specific actions taken or recommended to support goal completion. The table below describes each goal and its corresponding objective(s).

GOALS & OBJECTIVES

GOAL	OBJECTIVES TO ACCOMPLISH GOAL
Establish the tree inventory (per numbers agreed) at Longwood Mall.	ArborScope Inventory Management Tools, collect data such as tree name, location, size, age class, and condition class.
Provide mechanism for managing inventory, recommendations, and related budget planning.	assist the client in managing property areas. documents and organizes findings and provides other resources to assist the client in efficient use of the information.
Maximize client understanding and implementation of management plan.	and visuals related to plan recommendations. procedures, and standards related to tree care. answer any questions about the management plan's contents.
Maximize immediate and long-term tree health and aesthetics.	Implement recommended plant-health-care program that uses developmental pruning
Manage immediate and long-term maintenance needs associated with trees in high-use areas.	Implement recommended maintenance measures that include maintenance pruning

DATA COLLECTION & TREE INSPECTION METHODOLOGY

In conducting the inventory, we used specialized equipment and software and followed specific procedures to determine tree characteristics and recommendations. The following explanation will assist the reader in interpreting the findings of this management plan.

Data Collection Equipment & Attribute Data

The Inventory Team used Trimble® Catalyst DA2 GNSS receivers, TerraFlex® and Connect software, and Bartlett Tree Experts' ArborScope web-based management system to inventory the trees. The attribute data we collected on site are listed below.

botanical name and regional common name according to local ISA Chapter Tree Species List
tree location based on GPS coordinate system
tree ID number
diameter at breast height (**DBH**)
canopy radius
age class
height class
condition class
Tree & Shrub Work phase (based on number of desired management cycles)
pruning category
need for and inspection of existing structural support systems
tree removals
soil care recommendations
plant health care recommendations
noted defects/observations
observed pests/diseases

Specifications/Definitions

Age Class

New Planting	Tree not yet established
Young	Established tree but not in the landscape for many years
Semi-mature	Established tree but has not yet reached full growth potential
Mature	Tree within its full growth potential
Over-mature	Tree that is declining or beginning to decline due to its age

Height Class

Small	Less than 15 feet
Medium	15 to 40 feet
Large	Greater than 40 feet

Condition Class

Dead

Poor Most of the canopy displays dieback and undesirable leaf color, inappropriate leaf size or inadequate new growth. Tree or parts of tree are in the process of failure.

Fair Parts of canopy display undesirable leaf color, inappropriate leaf size, and inadequate new growth. Parts of the tree are likely to fail.

Good Tree health and condition are acceptable.

Tree & Shrub Work Phase

Tree & Shrub Work phase takes into consideration tree species, condition, location, age, and proximity to infrastructure. We intend for this rating system to assist decision makers in prioritizing tree pruning, cabling and bracing, and tree removal recommendations. Prioritization does not take into account any budgetary or financial considerations.

Phase 1, 2, and 3 are all based on observations by the inventory arborist according to the manager's goals. The following additional information clarifies each priority:

Phase 1 Typically addressed in the first management cycle. Trees located in high-use sites, have a high aesthetic value, have an elevated *overall tree risk rating*, and/or parts that are currently in conflict with infrastructure.

Phase 2 Typically addressed in the second management cycle. Trees with moderate aesthetic value don't have an elevated *overall tree risk rating*, and/or parts that are anticipated to be in conflict with infrastructure.

Phase 3 Typically addressed in the third management cycle. Tree parts that are anticipated to be in conflict with infrastructure and/or recommendations based on anticipated growth.

Pruning Category

All trees identified in this management plan that have tree care recommendations are listed within a specific pruning category. Trees within each pruning category can be prioritized by the specific goals of the manager. It is recommended that specific goals be discussed prior to any pruning.

Maintenance	This goal typically requires routine pruning of large/mature trees. Includes branch removal and/or branch reduction to help reduce *likelihood of failure* and/or conflict with infrastructure. Trees with this goal are typically climbed or require the use of aerial lifts and/or other specialized equipment.
Developmental	This goal typically requires routine pruning of small/young trees. Includes structural pruning to develop a strong central stem, establish proper branch spacing, and/or develop branch structure.

* The listed descriptions of goals, tools, and/or techniques are not limited to these definitions. Specific individual goals and species profiles should guide the pruning recommendations.

Limitations of Tree Risk Assessments

It is important for the tree owner or manager to know and understand that all trees pose some degree of risk from failure or other conditions. The information and recommendations within this report have been derived from the level of tree risk assessment identified in this report, using the information and practices outlined in the *International Society of Arboriculture's Best Management Practices for Tree Risk Assessment*, as well as the information available at the time of the inspection. However, the *overall tree risk rating*, the mitigation recommendations, or any other conclusions do not preclude the possibility of failure from undetected conditions, weather events, or other acts of man or nature. Trees can unpredictably fail even if no defects or other conditions are present. It is the responsibility of the tree owner or manager to schedule repeat or *Advanced assessments*, determine actions, and implement follow up recommendations, monitoring and/or mitigation.

Bartlett Tree Experts can make no warranty or guarantee whatsoever regarding the safety of any tree, trees, or parts of trees, regardless of the level of tree risk assessment provided, the risk rating, or the residual risk rating after mitigation. The information in this report should not be considered as making safety, legal, architectural, engineering, landscape architectural, land surveying advice or other professional advice. This information is solely for the use of the tree owner and manager to assist in the decision making process regarding the management of their tree or trees. Tree risk assessments are simply tools which should be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

STAND DYNAMICS RESULTS

STAND DYNAMICS RESULTS

In reviewing the results and recommendations, the reader will find useful the specifications and definitions detailed in the preceding methodology above. We used the following categories to organize the stand dynamics results, which are displayed in tables:

Subject Trees Summarized According to:

- Tree Species Identified
- Condition Class
- Age Class
- Tree Size per DBH
- Estimated Tree Asset Value

Where appropriate, we have included explanations, photos, drawings, or other information to illuminate the table contents.

Stand Dynamics

Tree Species Identified

Our inventory revealed 1 species of trees, as detailed in the following table:

TREE SPECIES IDENTIFIED

Genus	Species	Common Name	Count	% Distribution Total
Fagus	*sylvatica*	Beech-European	36	100%
Grand Total			**36**	**100%**

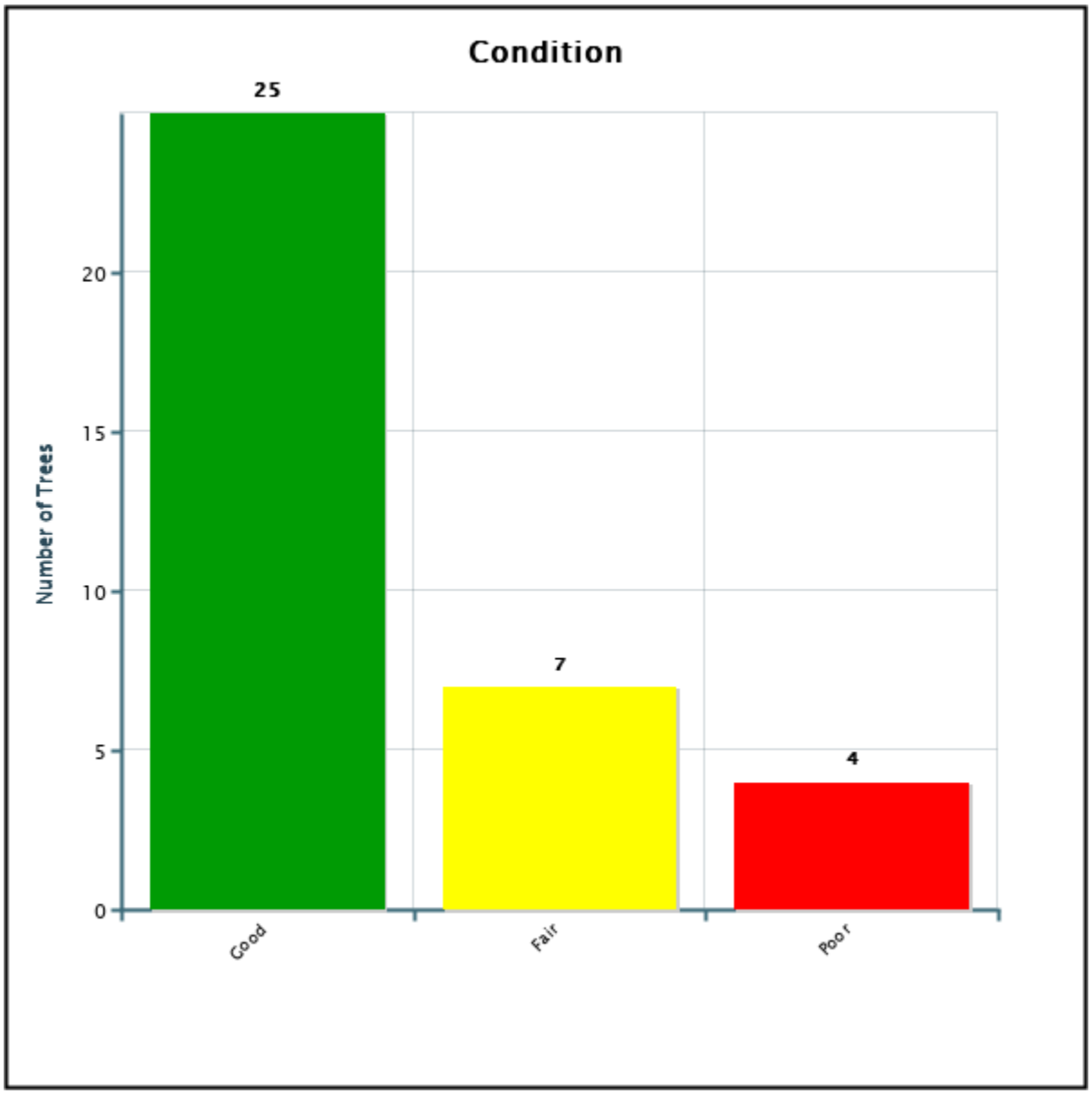
2025 TREE INVENTORY

Condition Class

The breakdown of tree condition follows:

CONDITION CLASS BREAKDOWN

Condition Class	Quantity	% of Total
Good	25	69%
Fair	7	19%
Poor	4	11%



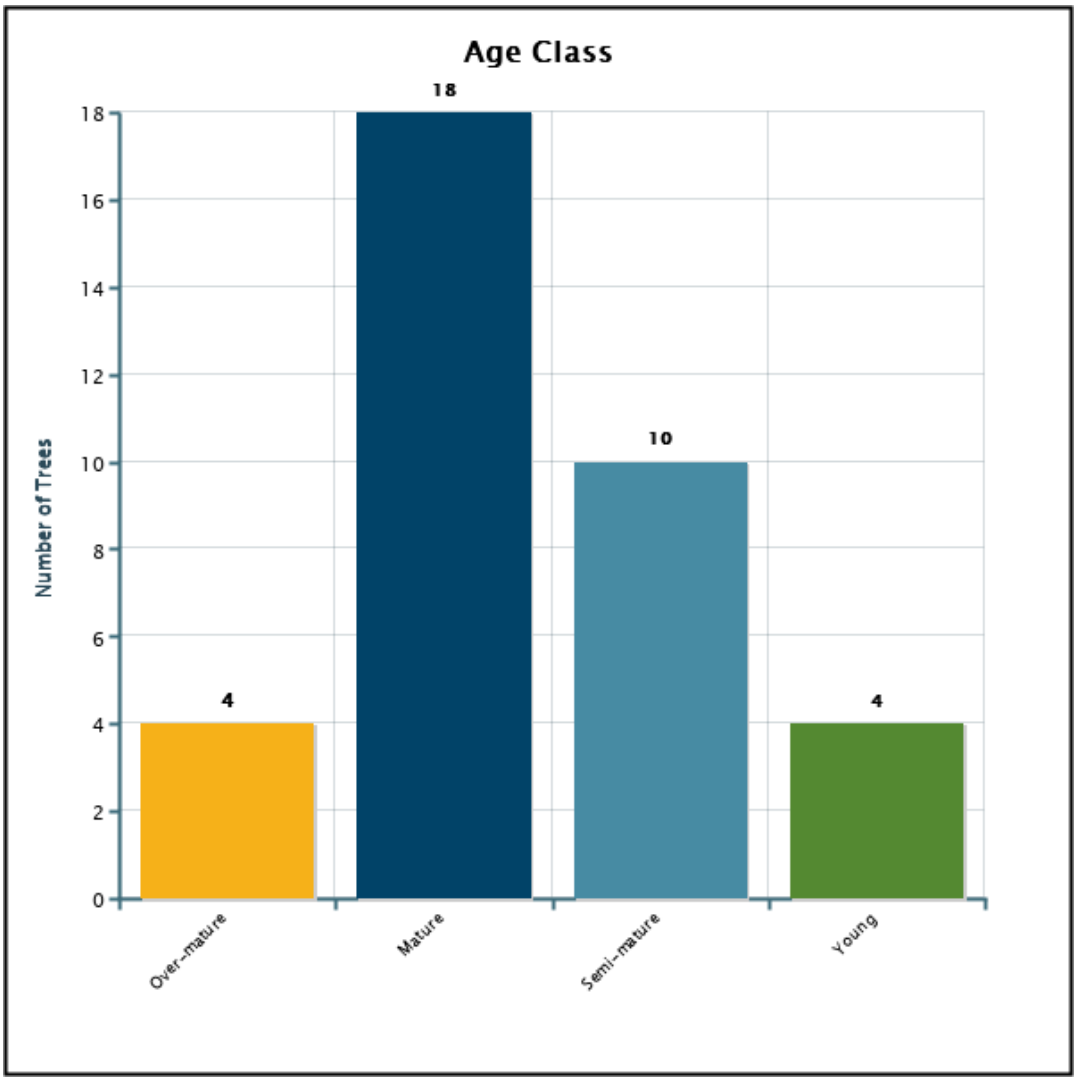
INVENTORIED TREES BY CONDITION CLASS

Age Class

The breakdown of tree age class follows:

AGE CLASS BREAKDOWN

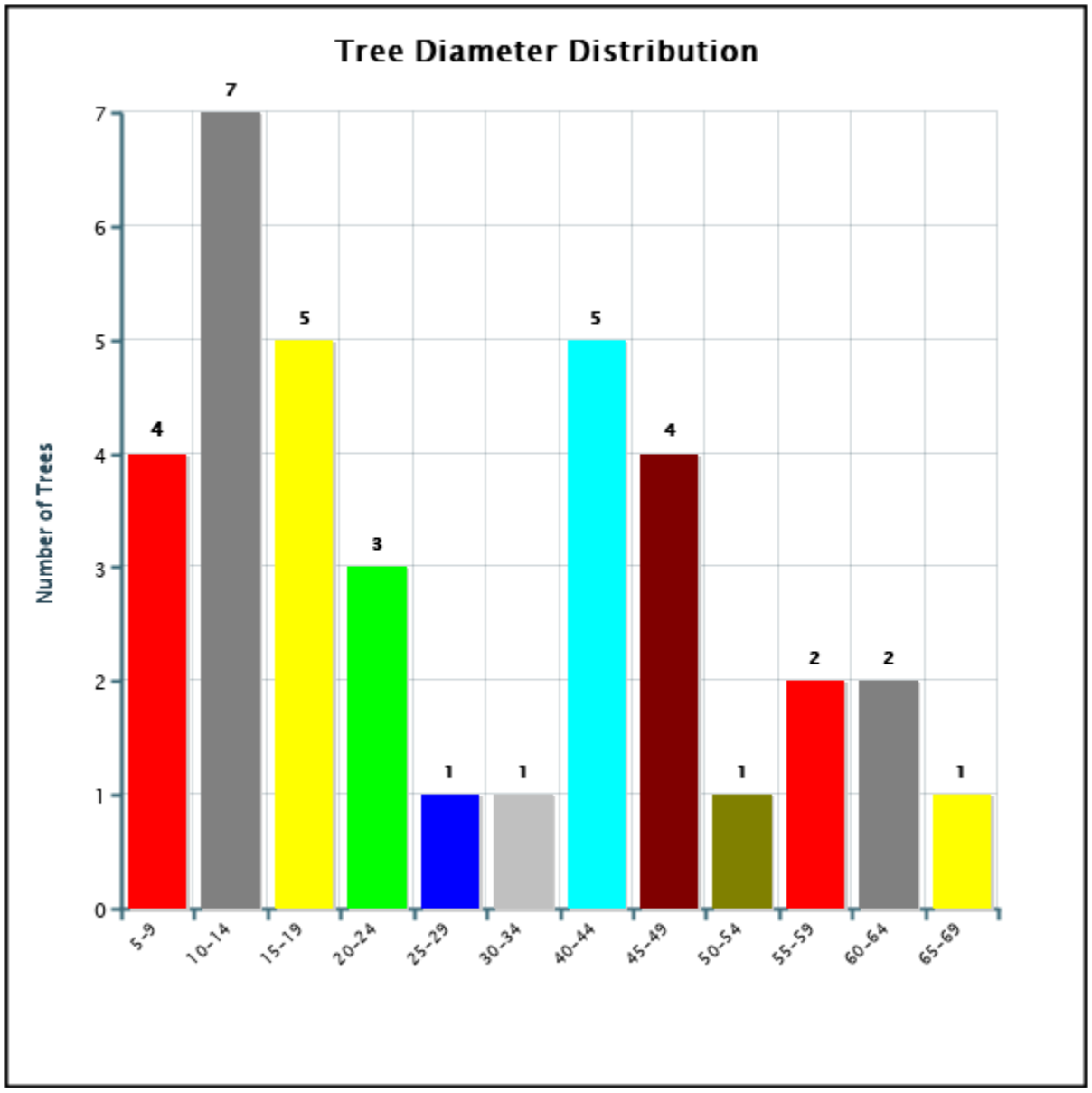
Age Class	Quantity	% of Total
Over-mature	4	11%
Mature	18	50%
Semi-mature	10	28%
Young	4	11%



INVENTORIED TREES BY AGE CLASS

Tree Size (DBH)

The following chart illustrates numbers of trees according to size per DBH:



Estimated Tree Asset Value

As part of the Bartlett inventory process, we have included an Estimated Tree Asset Value for each tree and a cumulative total for all trees inventoried. We use an average per square inch nursery price, size (DBH), species factor, condition factor, and location factor to estimate the tree asset value. This is not intended to replace a tree appraisal.

The following data fields are used in this formula:

Data Field	Description
Average Per Square Inch Nursery Price	Based on the average nursery prices for two common tree species and one exotic tree species within a region, then taking the average of those three as the average per square inch price for the region
Size	Based on tree DBH (4.5 feet above grade)
Species Factor	Relative species desirability based on 100% for the tree in that geographical location. In most cases, species desirability ratings, published by the International Society of Arboriculture, are used for adjustment.
Condition Factor	Rating of the tree's structure and health based on 100%
Location Factor	Average rating for the site and the tree's contribution and placement, based on 100%

Estimated Tree Asset Value = (Average Per Square Inch Nursery Price*Size)*Species Factor*Condition Factor*Location Factor

The estimated cumulative total value for all trees inventoried is **$954,629.00**. The following table lists the ten trees with the highest Tree Asset Values:

TOP TEN TREES - HIGHEST ESTIMATED TREE ASSET VALUE

Tree ID	Common Name	Genus	Species	DBH	Tree Asset Value
30	Beech-European	*Fagus*	*sylvatica*	34,32,31,17	$98,154.00
9	Beech-European	*Fagus*	*sylvatica*	59	$68,356.00
8	Beech-European	*Fagus*	*sylvatica*	48	$54,651.00
32	Beech-European	*Fagus*	*sylvatica*	23,20,18,17,15	$51,655.00
27	Beech-European	*Fagus*	*sylvatica*	62	$51,121.00
26	Beech-European	*Fagus*	*sylvatica*	45	$50,390.00
16	Beech-European	*Fagus*	*sylvatica*	61	$50,374.00
6	Beech-European	*Fagus*	*sylvatica*	57	$47,206.00
4	Beech-European	*Fagus*	*sylvatica*	42	$45,904.00
5	Beech-European	*Fagus*	*sylvatica*	50	$40,977.00

TOP TEN TREES - HIGHEST TREE ASSET VALUE

RECOMMENDATIONS

RECOMMENDATIONS

In reviewing the results and recommendations, the reader will find useful the specifications and definitions detailed in the preceding methodology. We used the following categories to organize the results and recommendations, which are displayed in tables:

Recommendations

Soil Care
Root Collar Excavation
Plant Health Care
Tree Pruning
Structural Support Systems
Tree Removal

Soil Care

Healthy soil is critical to the health and longevity of trees. Soil provides trees with the essential nutrients required for their growth. Many secondary problems such as reduced vigor, inadequate growth, branch dieback, and pest or disease concerns are related to the primary stress of poor soil conditions. Undisturbed, native forest soils generally contain adequate levels of organic matter, soil microbes, and nutrients. Urban, suburban, and landscape soils (as opposed to forest soils) usually lack these qualities, and are often compacted. In many cases, trees in a landscaped environment suffer from inadequate soil fertility, soil compaction, root zone competition with turf grasses, and inadequate total soil volume. Soil Care treatments should be applied as soon as possible, therefore they do not have a Tree & Shrub Work phase.

Bartlett Tree Experts recommends several procedures and treatments that address soil quality. Taking soil samples is perhaps the most important. Proper tree care cannot be initiated unless it is known what type of soil environment the trees are growing in. Soil testing results can help to create a path forward for improved tree health. We address some of these below.

Trees affected by Beech Leaf Disease (BLD) are generally recommended for soil care to improve tree health and vigor as much as possible. Cultural practices such as mulching, soil sampling, and Fortiphite treatments are recommended for all trees on the property, especially those in fair and poor condition.

Soil Sampling

Collecting soil samples and having them tested helps determine nutrients that may be lacking, unfavorable soil pH values, and adequacy of soil organic matter. Laboratory tests and analyses can determine the need for soil amendments.

Bulk Density

Compacted soils are regrettably common in the urban setting. A bulk density test, which requires an undisturbed core sample, measures the level of soil compaction. Arborists can use the results to diagnose problems or to determine what size holes to dig for planting. If soil density exceeds a measured threshold for a given soil type and tree species, we recommend Bartlett's Root Invigoration program.

Soil Rx®

Bartlett's Soil Rx® program, which is a prescription soil amendment program, aims to correct nutrient deficiencies and optimize soil conditions for designated trees.

Root Invigoration

The aim of Bartlett's patented Root Invigoration Program is to improve soil conditions by addressing soil compaction and promoting efficient root growth, especially for high-value trees in disturbed areas. The process includes taking soil samples to determine what nutrients are deficient, performing a root collar excavation, "air-tilling" a portion of the root zone to find fine roots, incorporating organic matter, applying soil amendments (based on soil sample), and applying mulch. The area of the root system treated can vary by tree. For the Root Invigoration Program to be successful, proper watering techniques must be employed after the process is complete.

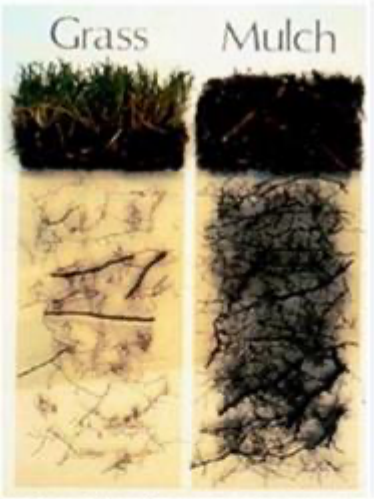
Fortiphite

Several trees on the site appear to be undergoing stress. This can be a result of pests or diseases, which will be discussed in the Plant Health Care section of this document. Stress may also occur because of environmental conditions, injury, and other reasons. Trees under stress are not only struggling, but they can attract secondary pests (such as borers and decay fungi) that may worsen their condition. Potassium polyphosphite, or Fortiphite, is a treatment that can help trees undergoing stress. Fortifite helps trees allocate energy for defense against harmful pests. Select trees were recommended for Fortifite treatment to support tree health. It is important to note that any trees would benefit from soil care activities. Trees recommended for Fortiphite a
map below.

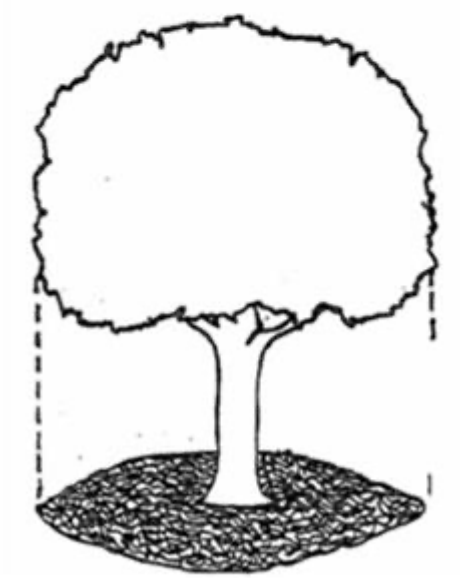
Mulch Application

Proper mulching (top left and bottom left) provides many benefits to trees and shrubs. It moderates soil temperatures, reduces soil moisture loss, reduces soil compaction, provides nutrients, and improves soil structure. This practice results in more root growth and healthier plants. The image on the top right illustrates root growth density under grass versus mulch. Mulch is frequently applied incorrectly (bottom right), so we recommend that readers inspect the technical report on mulch application guidelines that appears in the Appendix.

Example of how mulch should be installed, 2-4 inches thick and not against the trunk.



Example of root density under grass versus mulch.



Example of how mulch should be applied from the trunk to the dripline.

Example of improper mulch application, known as "volcano mulch".

At the time of inventory, no trees were directly recommended for soil care. However, we recommend soil sampling across maintained areas with prominent landscape plantings to identify opportunities to optimize soil conditions moving forward.

Root Collar Excavation

Excavating the root collar is necessary for trees whose buttress roots are covered by excess soil or mulch. Buried root collars can contribute to tree health problems, including girdling roots, basal cankers, and masking root and lower stem decay. Trees in the root collar excavation table do not have a Tree & Shrub Work phase and should be completed as soon as possible. The top image shows a buried root collar and the bottom image shows an exposed root collar.

Example of a buried root collar.

Example of an exposed root collar.

Girdling Roots

Girdling roots (top left and right) restrict water and nutrient movement throughout the tree. If left untreated they can cause the tree to decline, fail (bottom), and eventually die in severe cases. Girdling roots should be removed as soon as possible, unless removal of roots will significantly impact the condition or stability of the tree. In some cases, the presence of significant or severe girdling roots may cause the tree to be recommended for removal.

Examples of girdling roots.

Example of tree failure from girdling roots.

The following trees are recommended for a root collar excavation:

INVENTORIED TREES RECOMMENDED FOR A ROOT COLLAR EXCAVATION (4 Trees)

Tree ID	Common Name	DBH	Root Collar Observation
2	Beech-European	9	Buried root collar
15	Beech-European	14	Buried root collar
24	Beech-European	13,13,12,11,11,9	Buried root collar
29	Beech-European	7	Buried root collar

INVENTORIED TREES RECOMMENDED FOR A ROOT COLLAR EXCAVATION

Plant Health Care

The Inventory Team also recommends Plant Health Care (PHC) programs for trees in the formal landscape. In addition, an Integrated Pest Management (IPM) program monitors for potentially damaging insects, diseases and cultural problems that are often seasonal and may not have been evident during our inventory visit. Plant Health Care treatments should be applied as soon as possible, therefore they do not have a Tree & Shrub Work phase. These pests and diseases include, but are not limited to, the following. These observations do not include Beech Leaf Disease. Please see the section below for more information about BLD and treatment.

Anthracnose - on a variety of species
Aphids - on a variety of species
Bacterial Leaf Scorch - on trees within red oak group
Bagworms - on a variety of tree species
Boring Insects - on a variety of tree species
Caterpillar Defoliators - on a variety of tree species, especially oak
Gall Insects - on a variety of species
Lacebugs - on a variety of species
Scab and Rust Fungi - on crabapple and apple species.
Suspected Phytophthora Root Rot and Canker - on a variety of tree species, especially beech species
Scale Insects - on a variety of tree species, especially oak
Spider Mites - on a variety of tree species

We identified pests or diseases on the following inventoried trees at the time of the inventory:

INVENTORIED TREES IDENTIFIED FOR PLANT HEALTH CARE (6 Trees)

Tree ID	Common Name	DBH	Pest(s) or Disease(s)
4	Beech-European	42	Aphids
5	Beech-European	50	Aphids Defoliating caterpillars
7	Beech-European	42	Defoliating caterpillars
8	Beech-European	48	Defoliating caterpillars
27	Beech-European	62	Phytophthora (suspected)
34	Beech-European	13,11,10	Aphids

INVENTORIED TREES IDENTIFIED FOR PLANT HEALTH CARE

Beech Leaf Disease

The Inventory Team also observed trees with an eye for Beech Leaf Disease (BLD). Beech Leaf Disease is a serious issue for beech trees caused by a foliar nematode and results in decline and death of beech trees. Though leaves were not present at the time of the site inspection, trees were sorted into categories to illustrate the impact of beech leaf disease and other factors on tree health rating scale developed for evaluating ash trees in areas with Emerald Ash Borer populations.

Generally, all beech trees that are desired to be retained should be treated with either a foliar treatment or a systemic treatment. Foliar treatments may be more time and cost effective for younger, smaller stature trees. Treatments on these trees can easily attain complete canopy coverage and be an effective option to suppress BLD. Systemic treatments may be more effective for larger trees with a wide and tall canopy. Environmental and mechanical limitations can prevent foliar treatments from reaching the entirety of a tree with a large canopy.

RATING SCALE FOR BEECHES AFFECTED BY BEECH LEAF DISEASE

Rating	Description
1	Canopy appears full and healthy
2	Canopy shows evidence of reduced canopy density, but no dieback (dead top branches in canopy)
3	Canopy shows signs of dieback, canopy appears to have less than 50% of the canopy affected
4	Canopy shows signs of dieback, canopy appears to have more than 50% of the canopy affected
5	Canopy appears to be dead, epicormic sprouts may be present on the stem

Trees with a 3, 4, or 5 BLD rating may not be suitable for BLD treatment, depending on management goals. If they are desired to be treated, a foliar application program may be more effective for treatment. Trees with significant dieback in the canopy may not be able to efficiently uptake the systemic material and spread it throughout the canopy as needed for the treatment to be effective.

Additionally, trees with buried root collars or significant girdling roots should have a root collar excavation performed if a systemic treatment is desired. If a systemic treatment is desired on smaller trees, clearance pruning may be required to raise the canopies and improve access to the root flares. This would be needed to allow the plant health care technician to perform the systemic treatments.

Tree #36 was given a BLD rating of 4. Over 50% of the canopy appears to be experiencing dieback.

Tree #3 was given a BLD rating of 1. This tree has a full and healthy canopy. Because of its smaller size, a foliar treatment may be appropriate for this tree. If a systemic treatment is desired, clearance pruning may be needed to raise the canopy for an applicator to access the root flare.

Each beech tree on the property was given a rating and a recommended treatment option for BLD. Overall, 19 trees were recommended for foliar BLD treatments, and 17 trees were recommended for systemic BLD treatments. A table of these findings are described below:

INVENTORIED TREES WITH A BLD RATING AND RECOMMENDATIONS FOR TREATMENT (36 Trees)

Tree ID	Common Name	Condition Class	DBH	Height Class	BLD Rating	Recommended Treatment Option
1	Beech-European	Good	10	Medium	1	Foliar
2	Beech-European	Good	9	Medium	1	Foliar
3	Beech-European	Good	15	Medium	1	Foliar
4	Beech-European	Good	42	Large	1	Systemic
5	Beech-European	Fair	50	Large	1	Systemic
6	Beech-European	Fair	57	Large	2	Systemic
7	Beech-European	Fair	42	Large	2	Systemic
8	Beech-European	Good	48	Large	1	Systemic
9	Beech-European	Good	59	Large	2	Systemic
10	Beech-European	Good	11,9,9,8	Medium	1	Foliar
11	Beech-European	Good	9,5,4,4	Medium	2	Foliar
12	Beech-European	Good	13,11,4	Medium	1	Foliar
13	Beech-European	Poor	40	Large	4	Foliar
14	Beech-European	Good	11,10,10,9,9,8	Medium	1	Foliar
15	Beech-European	Good	14	Medium	1	Foliar
16	Beech-European	Fair	61	Large	3	Systemic
17	Beech-European	Poor	65	Medium	4	Foliar
18	Beech-European	Good	8	Medium	1	Foliar
19	Beech-European	Good	18	Medium	1	Foliar
20	Beech-European	Good	26	Large	1	Systemic
21	Beech-European	Good	21	Medium	2	Systemic
22	Beech-European	Good	19	Medium	1	Foliar
23	Beech-European	Fair	46	Large	2	Systemic
24	Beech-European	Good	13,13,12,11,11,9	Medium	1	Foliar
25	Beech-European	Fair	46	Large	3	Systemic
26	Beech-European	Good	45	Large	1	Systemic
27	Beech-European	Fair	62	Large	2	Systemic
28	Beech-European	Good	15	Medium	1	Foliar
29	Beech-European	Good	7	Medium	1	Foliar
30	Beech-European	Good	34,32,31,17	Large	1	Systemic
31	Beech-European	Poor	42,18	Large	2	Systemic
32	Beech-European	Good	23,20,18,17,15	Large	1	Systemic
33	Beech-European	Good	19,13,11,11,9	Large	1	Systemic

Tree ID	Common Name	Condition Class	DBH	Height Class	BLD Rating	Recommended Treatment Option
34	Beech-European	Good	13,11,10	Medium	1	Foliar
35	Beech-European	Good	24	Medium	1	Foliar
36	Beech-European	Poor	41	Medium	4	Foliar

INVENTORIED TREES RECOMMENDED FOR FOLIAR BLD TREATMENT

Condition: Good Poor

INVENTORIED TREES RECOMMENDED FOR SYSTEMIC BLD TREATMENT

Condition: Good Fair Poor

Tree Pruning

A commonly offered service among tree companies, pruning trees is one of the most poorly executed practices by tree workers who lack training in the basics of tree biology. "Lion's tailing," topping, and flush cuts are a few examples, and these can lead to hazardous conditions over time.

Because this practice is so misunderstood, and because specific standards exist to perform pruning correctly, the Inventory Team decided to include some explanation in the main body of this management plan.

Tree owners and tree-care practitioners should always keep in mind that any pruning cut is a wound. Informed tree-care professionals have learned to manage that wounding to preserve the health, safety, and integrity of the tree.

Improper Pruning Practices

A few of the most common pruning abuses are:

Lion's Tailing - pruning that removes interior branches along the stem and scaffold branches. This encourages poor branch taper, poor wind load distribution, and risk of branch failure. It also deprives the tree of foliage it needs to produce **photosynthates**. See next page, top left.

Topping - pruning cuts that reduce a tree's size by using heading cuts that shorten branches to a predetermined size. Topping substantially reduces the functional benefits a tree is capable of providing and predisposes trees to structural defects that can contribute to failures in the future. It also reduces the value of the trees substantially and deprives the tree of adequate foliage. See next page, top right.

Flush Cuts - pruning cut through the **branch collar**, flush against the trunk or parent stem, causing unnecessary injury. See next page, bottom.

Using Climbing Spikes Inappropriately - Using climbing spikes on a healthy tree, for example, wounds healthy stem tissues and can lead to infection by fungal pathogens.

Example of Lion's tailing.

Examples of topping.

Examples of flush cuts.

Pruning with a Goal

Below are illustrations of common pruning goals:

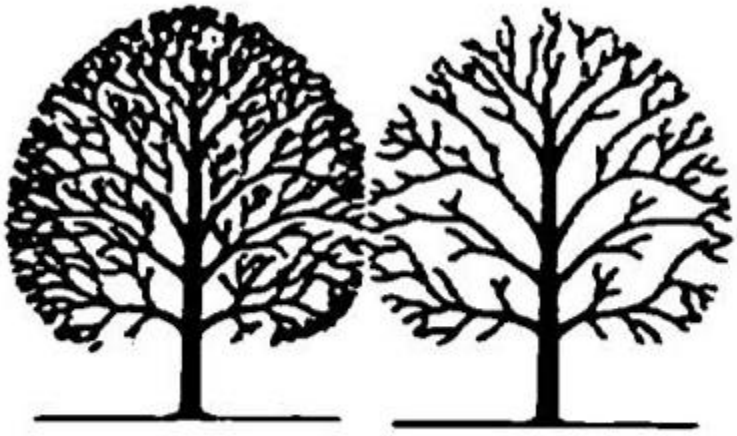


Illustration of improving airflow to reduce disease.

Illustration of branch weight reduction.

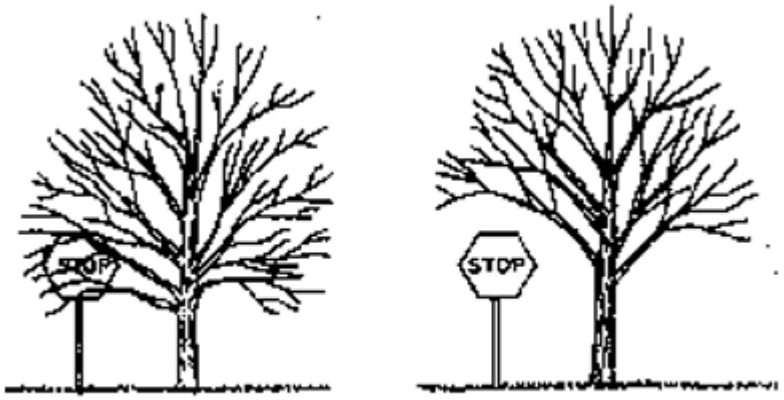


Illustration of raising branch elevation to improve clearance.

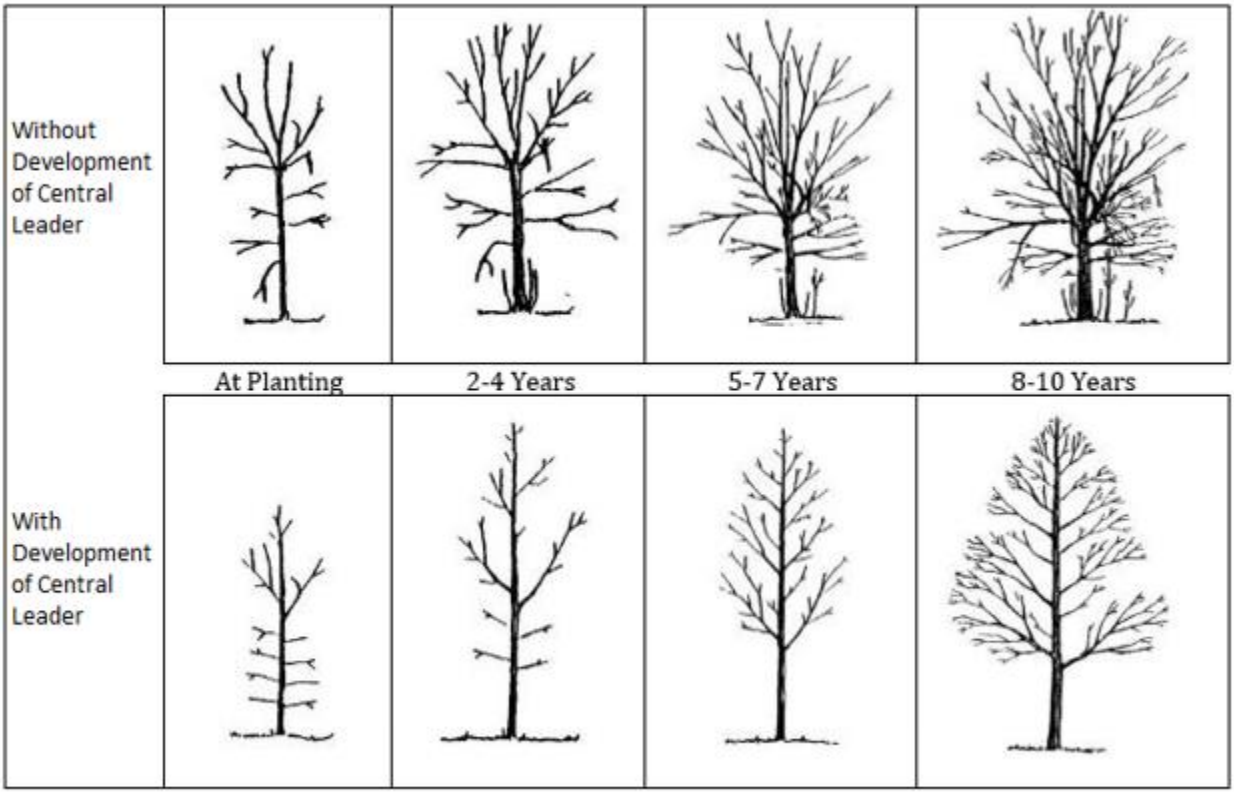


Illustration of promoting a strong central leader.

Pruning Category

All trees identified in this management plan that have pruning recommendations are listed with a specific pruning category. The listed order of these pruning categories are typical to most managers. Trees within each category are prioritized by the specific goals of most managers. It is recommended that specific goals be discussed with your local Bartlett Arborist Representative. Pruning categories are separated into individual tables below where each table lists specific arboricultural pruning goals and recommendations for each tree.

Maintenance Pruning

This goal typically requires routine pruning of large/mature trees. Includes branch removal and/or branch reduction to help reduce *likelihood of failure* and/or conflict with infrastructure. Trees with these goals are typically climbed or require the use of aerial lifts and/or other specialized equipment.

The trees in this table are recommended for maintenance pruning:

INVENTORIED TREES RECOMMENDED FOR MAINTENANCE PRUNING (16 Trees)

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
5	Beech-European	50	1	Clearance Improve appearance	Co-dominant stems Poor branch structure Uneven crown Wound-stem
8	Beech-European	48	1	Improve appearance	Co-dominant stems Dead branches >2 Included bark
9	Beech-European	59	1	Improve appearance	Broken branch(s) Co-dominant stems Dead branches >2 Decay-stem Poor branch structure
16	Beech-European	61	1	Reduce likelihood of storm damage Improve appearance	Broken branch(s) Co-dominant stems Dead branches >2 Decay-branch

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
25	Beech-European	46	1	Improve appearance Reduce likelihood of storm damage	Co-dominant stems Dead branches >2 Decay-stem Dieback (moderate) Girdling roots present Poor branch structure
26	Beech-European	45	1	Improve appearance Reduce likelihood of storm damage	Co-dominant stems Dead branches >2 Poor branch structure
27	Beech-European	62	1	Reduce likelihood of storm damage Improve appearance	Burl Co-dominant stems Dead branches >2 Decay-branch Decay-stem
30	Beech-European	34,32,31,17	1	Reduce likelihood of storm damage Improve appearance	Co-dominant stems Dead branches >2
31	Beech-European	42,18	1	Reduce likelihood of storm damage Improve appearance	Co-dominant stems Dead branches >2 Decay-stem Fungi/conks Included bark Poor branch structure
36	Beech-European	41	1	Improve appearance	Dead branches >2 Dieback (severe) Poor branch structure
4	Beech-European	42	2	Improve appearance Develop branch structure	Co-dominant stems Dead branches <=2 Poor branch structure Uneven crown
21	Beech-European	21	2	Improve appearance Develop branch structure	Co-dominant stems Dead branches <=2 Poor branch structure
23	Beech-European	46	2	Improve appearance Reduce likelihood of storm damage	Broken branch(s) Co-dominant stems Decay-stem Fungi/conks Poor branch structure
32	Beech-European	23,20,18,17,15	2	Improve appearance	Co-dominant stems Dead branches >2 Poor branch structure

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
7	Beech-European	42	3	Improve appearance	Broken branch(s) Co-dominant stems Poor branch structure
33	Beech-European	19,13,11,11,9	3	Improve appearance	Co-dominant stems Dead branches <=2 Decay-branch Poor branch structure

INVENTORIED TREES RECOMMENDED FOR MAINTENANCE PRUNING

Tree & Shrub Work Phase: 1 2 3

Developmental Pruning

This goal typically requires routine pruning of small/young trees. Includes structural pruning to develop a strong central stem, establish proper branch spacing, and/or develop branch structure.

The trees in this table are recommended for developmental pruning:

INVENTORIED TREES RECOMMENDED FOR DEVELOPMENTAL PRUNING (13 Trees)

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
1	Beech-European	10	2	Promote development of strong central stem Develop branch structure	Co-dominant stems Included bark Poor branch structure
3	Beech-European	15	2	Promote development of strong central stem Develop branch structure Improve appearance	Co-dominant stems Dead branches <=2 Included bark Poor branch structure
15	Beech-European	14	2	Promote development of strong central stem Develop branch structure	Buried root collar Poor branch structure
19	Beech-European	18	2	Promote development of strong central stem Develop branch structure	Co-dominant stems Dead branches <=2 Poor branch structure
20	Beech-European	26	2	Promote development of strong central stem Develop branch structure Improve appearance	Co-dominant stems Dead branches >2 Included bark Poor branch structure
22	Beech-European	19	2	Promote development of strong central stem Develop branch structure	Co-dominant stems Dead branches <=2 Poor branch structure
24	Beech-European	13,13,12,11,11,9	2	Promote development of strong central stem Develop branch structure	Co-dominant stems Dead branches >2 Included bark Poor branch structure
35	Beech-European	24	2	Promote development of strong central stem Develop branch structure	Co-dominant stems Included bark Poor branch structure

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
2	Beech-European	9	3	Promote development of strong central stem Develop branch structure	Buried root collar Poor branch structure
14	Beech-European	11,10,10,9,9,8	3	Promote development of strong central stem Develop branch structure	Co-dominant stems Dead branches <=2 Included bark
18	Beech-European	8	3	Promote development of strong central stem Develop branch structure	Co-dominant stems Poor branch structure
28	Beech-European	15	3	Promote development of strong central stem Develop branch structure Improve appearance	Co-dominant stems Dead branches <=2 Included bark Uneven crown
29	Beech-European	7	3	Promote development of strong central stem Develop branch structure	Buried root collar Poor branch structure

INVENTORIED TREES RECOMMENDED FOR DEVELOPMENTAL PRUNING

Tree & Shrub Work Phase: 2 3

Structural Support Systems

Structural support systems can reduce risk of tree or tree part(s) failure by limiting movement of stems or branches in certain situations. Examples include co-dominant stems or overextended branches with heavy foliage loads.

Cabling

Cabling is the process of connecting two or more upright stems to one another to add stability and reduce the *likelihood of failure*. In some instances, a lateral branch may be secured to the central leader using a cabling system to support the weight of the branch.

Tree #5 was observed to have a structural support cable (circled in red on image). All structural support cables are recommended for annual inspection to ensure the system is functioning properly. This cable may need to be replaced due to age and the fact that it is now low in canopy. This may be the case because the tree has grown taller since the cable has been installed.

The following table lists all inventoried trees with structural support system recommendations:

INVENTORIED TREES WITH STRUCTURAL SUPPORT SYSTEM RECOMMENDATIONS (5 Trees)

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Structural Support
5	Beech-European	50	1	Cable: Inspect/New
8	Beech-European	48	1	Cable: Inspect/New
9	Beech-European	59	1	Cable: Inspect/New
26	Beech-European	45	1	Cable: Inspect/New
31	Beech-European	42,18	1	Cable: Inspect/New

INVENTORIED TREES WITH STRUCTURAL SUPPORT SYSTEM RECOMMENDATIONS

Structural Support: Cable

Tree Removal

In some cases, the inspector may determine need for removal while assessing the tree. Trees may be recommended for removal during the inventory for several reasons:

The tree is dead;
The tree is in poor condition and thought to be beyond rehabilitation;
The tree is over-mature and will continue to decline in condition;
The tree has significant structural weaknesses that cannot be addressed; and/or,
The location value for the tree is poor or unacceptable (for example, large maturing tree growing directly under overhead lines)

Tree #17 was recommended for removal because of significant dieback and decay in the lower stem. Though the main stem should be removed, layered branches from this tree have the potential to be reatined on the site.

The tree listed in the table below is recommended for removal:

INVENTORIED TREE RECOMMENDED FOR REMOVAL (1 Tree)

Tree ID	Common Name	DBH	Condition	Tree & Shrub Work Phase	Defect(s) or Observation(s)
17	Beech-European	65	Poor	1	Decay-stem Dieback (severe) Fungi/conks Low vigor

INVENTORIED TREE RECOMMENDED FOR REMOVAL

DEFECTS OR OBSERVATIONS

DEFECTS OR OBSERVATIONS

The following table lists inventoried trees for which we noted defects, observations, or other structural issues and did not have pruning and/or removal recommendations that were previously reported.

INVENTORIED TREES WITH DEFECTS, OBSERVATIONS, OR OTHER STRUCTURAL ISSUES (6 Trees)

Tree ID	Common Name	DBH	Defect(s) or Observation(s)
6	Beech-European	57	Co-dominant stems Dead branches <=2 Decay-stem Poor branch structure Uneven crown
10	Beech-European	11,9,9,8	Co-dominant stems Dead branches >2
11	Beech-European	9,5,4,4	Co-dominant stems Dead branches <=2 Wound-stem
12	Beech-European	13,11,4	Co-dominant stems Dead branches >2 Uneven crown
13	Beech-European	40	Dead branches >2 Dieback (severe) Hanger Low vigor
34	Beech-European	13,11,10	Co-dominant stems Dead branches <=2 Poor branch structure

INVENTORIED TREES WITH DEFECTS, OBSERVATIONS, OR OTHER STRUCTURAL ISSUES

ENTIRE INVENTORY

ENTIRE INVENTORY (36 Trees)

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
1	Beech-European	*Fagus*	*sylvatica*	10	Medium	Semi-mature	Good	2	$2,923.00
2	Beech-European	*Fagus*	*sylvatica*	9	Medium	Young	Good	3	$2,367.00
3	Beech-European	*Fagus*	*sylvatica*	15	Medium	Semi-mature	Good	2	$6,577.00
4	Beech-European	*Fagus*	*sylvatica*	42	Large	Mature	Good	2	$45,904.00
5	Beech-European	*Fagus*	*sylvatica*	50	Large	Mature	Fair	1	$40,977.00
6	Beech-European	*Fagus*	*sylvatica*	57	Large	Mature	Fair	...	$47,206.00
7	Beech-European	*Fagus*	*sylvatica*	42	Large	Mature	Fair	3	$32,788.00
8	Beech-European	*Fagus*	*sylvatica*	48	Large	Mature	Good	1	$54,651.00
9	Beech-European	*Fagus*	*sylvatica*	59	Large	Over-mature	Good	1	$68,356.00
10	Beech-European	*Fagus*	*sylvatica*	11,9,9,8	Medium	Semi-mature	Good	...	$10,143.00
11	Beech-European	*Fagus*	*sylvatica*	9,5,4,4	Medium	Young	Good	...	$4,034.00
12	Beech-European	*Fagus*	*sylvatica*	13,11,4	Medium	Semi-mature	Good	...	$8,945.00
13	Beech-European	*Fagus*	*sylvatica*	40	Large	Mature	Poor	...	$18,338.00
14	Beech-European	*Fagus*	*sylvatica*	11,10,10,9,9,8	Medium	Semi-mature	Good	3	$15,990.00
15	Beech-European	*Fagus*	*sylvatica*	14	Medium	Semi-mature	Good	2	$5,729.00
16	Beech-European	*Fagus*	*sylvatica*	61	Large	Over-mature	Fair	1	$50,374.00
17	Beech-European	*Fagus*	*sylvatica*	65	Medium	Over-mature	Poor	1	$31,953.00
18	Beech-European	*Fagus*	*sylvatica*	8	Medium	Young	Good	3	$1,870.00
19	Beech-European	*Fagus*	*sylvatica*	18	Medium	Semi-mature	Good	2	$9,471.00
20	Beech-European	*Fagus*	*sylvatica*	26	Large	Mature	Good	2	$19,761.00
21	Beech-European	*Fagus*	*sylvatica*	21	Medium	Mature	Good	2	$12,891.00
22	Beech-European	*Fagus*	*sylvatica*	19	Medium	Mature	Good	2	$10,553.00
23	Beech-European	*Fagus*	*sylvatica*	46	Large	Mature	Fair	2	$37,025.00
24	Beech-European	*Fagus*	*sylvatica*	13,13,12,11,11,9	Medium	Semi-mature	Good	2	$23,532.00
25	Beech-European	*Fagus*	*sylvatica*	46	Large	Mature	Fair	1	$37,025.00

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
26	Beech-European	*Fagus*	*sylvatica*	45	Large	Mature	Good	1	$50,390.00
27	Beech-European	*Fagus*	*sylvatica*	62	Large	Over-mature	Fair	1	$51,121.00
28	Beech-European	*Fagus*	*sylvatica*	15	Medium	Semi-mature	Good	3	$6,577.00
29	Beech-European	*Fagus*	*sylvatica*	7	Medium	Young	Good	3	$1,432.00
30	Beech-European	*Fagus*	*sylvatica*	34,32,31,17	Large	Mature	Good	1	$98,154.00
31	Beech-European	*Fagus*	*sylvatica*	42,18	Large	Mature	Poor	1	$23,732.00
32	Beech-European	*Fagus*	*sylvatica*	23,20,18,17,15	Large	Mature	Good	2	$51,655.00
33	Beech-European	*Fagus*	*sylvatica*	19,13,11,11,9	Large	Mature	Good	3	$24,936.00
34	Beech-European	*Fagus*	*sylvatica*	13,11,10	Medium	Semi-mature	Good	...	$11,401.00
35	Beech-European	*Fagus*	*sylvatica*	24	Medium	Mature	Good	2	$16,838.00
36	Beech-European	*Fagus*	*sylvatica*	41	Medium	Mature	Poor	1	$19,010.00

APPENDIX

ADDITIONAL RESOURCES

Bartlett publishes a variety of tree-resource documents, including technical reports, plant health care recommendations, and service brochures. The following technical reports may be pertinent to your inventory. To access these documents and view the complete Bartlett Resource Library online, please follow this URL:

https://www.bartlett.com/resourcelist.cfm

Girdling Roots

Maintenance Pruning Program

Monitor IPM Program

Mulch Application Guidelines

Tree Risk Assessments

Tree Structure Evaluation

GLOSSARY OF TERMS

air pollution removal: removal of pollutants from the air by plants through natural processes

arborist: 1. 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. [ANSI A300 (Part 1, 2, 4, 5, 6)] 2. An individual engaged in the profession of arboriculture. [ANSI Z133.1-2000 Safety Requirements for Arboricultural Operations]

bracing: The installation of lag-thread screw or threaded-steel rods in limbs, leaders, or trunks to provide supplemental support. [ANSI A300 (Part 3)-2000 Support Systems]

branch: An outgrowing shoot, stem or twig that grows from the main stem or trunk. [ANSI Z60.1-2004 Nursery Stock]

buttress roots: Lateral surface roots that aid in stabilizing the tree.

cable: 1) Zinc coated strand per ASTM A-475 for dead-end grip applications. 2) Wire rope or strand for general applications. 3) Synthetic-fiber rope or synthetic-fiber webbing for general applications. [ANSI A300 (Part 3)-2000 Support Systems]

cabling: The installation of a steel wire rope, steel strand, or synthetic-fiber system within a tree between limbs or leaders to limit movement and provide supplemental support. [ANSI A300 (Part 3)-2000 Support Systems]

canopy: collective branches and foliage of a tree or group of trees' crowns

carbon sequestration: removal of carbon from the air by plants through natural processes

carbon storage: storage of carbon removed from the air in plant tissues

cation exchange capacity (CEC): The ability of soil to absorb nutrients.

cavity: An open wound characterized by the presence of decay and resulting in a hollow.

cleaning: Selective pruning to remove one or more of the following parts: dead, diseased, and/ or broken branches (5.6.1). [ANSI A300 (Part 1)-2001 Pruning]

co-dominant branches: Equal in size and importance, usually associated with either the trunks, stems, or scaffold limbs.

conk: fruiting body or non-fruiting body of a fungus. Often associated with decay.

critical root zone (CRZ): area of soil around a tree trunk where roots are located that provide stability and uptake of water and minerals required for tree survival.

crown: 1. The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree. [ANSI A300 (Part 1)-2001 Pruning] [ANSI A300 (Part 6)-2005 Transplanting] 2. The portion of a tree comprising the branches. [ANSI Z60.1-2004 Nursery Stock]

D.B.H. [diameter at breast height]: Measurement of trunk diameter taken at 4.5 feet (1.4 m) off the ground. [ANSI A300 (Part 6)-2005 Transplanting]

decay: The degradation of woody tissue caused by microorganisms. [ANSI A300 (Part 1)-2001 Pruning]

Geographic Information System (GIS): is any system for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to earth.

girdling root: A root that may impede proper development of other roots, trunk flare, and/or trunk. [ANSI A300 (Part 6)-2005 Transplanting]

Global Navigation Satellite System (GNSS): A system that provides robust autonomous geopositioning services via multiple orbiting satellites, ground control stations, and receivers to provide location information.

Global Positioning System (GPS): A constellation of at least 24 Medium Earth Orbit satellites that transmit precise microwave signals, the system enables a GPS receiver to determine its location, speed, direction, and time.

heading: cutting a shoot back to a bud or cutting branches back to buds, stubs, or lateral branches not large enough to assume apical dominance. Cutting an older branch or stem back to meet a structural objective

integrated pest management (IPM): A pest control strategy that uses an array of complementary methods: mechanical devices, physical devices, genetic, biological, legal, cultural management, and chemical management. These methods are done in three stages of prevention, Observation, and finally Intervention. It is an ecological approach that has its main goal is to significantly reduce or eliminate the use of pesticides.

lateral branch: A shoot or stem growing from a parent branch or stem. [ANSI A300 (Part 1)-2001 Pruning]

leader: A dominant or co-dominant, upright stem. [ANSI A300 (Part 1)-2001 Pruning]

lean: Departure from vertical of the stem, beginning at or near the base of the trunk.

limb: A large, prominent branch. [ANSI A300 (Part 1)-2001 Pruning]

lion's tailing: The removal of an excessive number of inner, lateral branches from parent branches. Lion's tailing is not an acceptable pruning practice (5.5.7). [ANSI A300 (Part 1)-2001 Pruning]

macronutrient: Nutrient required in relatively large amounts by plants, such as nitrogen (N), phosphorus (P), potassium (K), and sulfur (S). [ANSI A300 (Part 2)-2004 Fertilization]

micronutrient: Nutrient required in relatively small amounts by plants, such as iron (Fe), manganese (Mn), zinc (Zn), copper (Cu), and boron (B). [ANSI A300 (Part 2)-2004 Fertilization]

noise attenuation: reducing sound levels via materials, structures, plants, etc.

nutrient: Element or compound required for growth, reproduction or development of a plant. [ANSI A300 (Part 2)-2004 Fertilization]

organic matter: material derived from the growth (and death) of living organisms. The organic components of soil.

parent branch or stem: A tree trunk, limb, or prominent branch from which shoots or stems grow. [ANSI A300 (Part 1)-2001 Pruning]

pH: unit of measurement that describes the alkalinity or acidity of a solution. Measured on a scale of 0 to 14. Greater than 7 Is alkaline, less than 7 is acid, and 7 is neutral (pure water).

pruning: The selective removal of plant parts to meet specific goals and objectives. [ANSI A300 (Part 1)-2001 Pruning]

qualified arborist: An individual who, by possession of a recognized degree, certification, or professional standing, or through related training and on-the-job experience, is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated ability in the performance of the special techniques involved. [ANSI Z133.1-2000 Safety Requirements for Arboricultural Operations]

raising: Selective pruning to provide vertical clearance (5.6.3). [ANSI A300 (Part 1)-2001 Pruning]

reduction: Selective pruning to decrease height and/or spread (5.6.4). [ANSI A300 (Part 1)-2001 Pruning]

risk assessment: process of evaluating what unexpected things could happen, how likely it is, and what the likely outcomes are. In tree management, the systematic process to determine the level of risk posed by a tree, tree part, or group of trees.

root collar: 1. The transition zone between the trunk and the root system. [ANSI A300 (Part 6)-2005 Transplanting] 2. See COLLAR. [ANSI Z60.1-2004 Nursery Stock]

root flare or trunk flare: The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk. [ANSI Z60.1-2004 Nursery Stock] [ANSI A300 (Part 6)-2005 Transplanting]

root zone: The volume of soil containing the roots of a plant. [ANSI A300 (Part 5)-2005 Management]

secondary nutrient: Nutrient required in moderate amounts by plants, such as calcium (Ca) and magnesium (Mg). [ANSI A300 (Part 2)-2004 Fertilization]

seam: Vertical line that appears where two edges of wound wood or callus ridge meet.

soil amendment: Any material added to soil to alter its composition and structure, such as sand, fertilizer, or organic matter. [ANSI A300 (Part6)-2005 Transplanting]

soil pH: A measure of the acidity or alkalinity of the soil.

stormwater runoff: water (generally from rain or snow melt) that flows over the ground after storm events.

structural support system: hardware installed in tree, may be; cables, braces, or guys, to provide supplemental support.

sweep: Departure from vertical of the stem, beginning above the base of the trunk.

thinning: Selective pruning to reduce density of live branches (5.6.2). [ANSI A300 (Part 1)-2001 Pruning]

tree risk assessment: Closer inspection of visibly damaged, dead, defected, diseased, leaning or dying tree to determine management needs.

topping: The reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not acceptable pruning practice. (5.5.7). [ANSI A300 (Part 1)-2001 Pruning]

tree inventory: A comprehensive list of individual trees providing descriptive information on all or a portion of the project area. [ANSI A300 (Part 5)-2005 Management during site planning, site development, and construction]

tree protection zone: A space above and belowground within which trees are to be retained and protected. [ANSI A300 (Part 5)-2005 Management during site planning, site development, and construction]

trunk: That portion of a stem or stems of a tree before branching occurs. [ANSA Z60.1-2004 Nursery Stock]

vigor: Overall health. Capacity to grow and resist stress. [ISA Municipal Specialist Certification Study Guide 2008]

wound: An opening that is created when the bark of a living branch or stem is penetrated, cut, or removed. [ANSI A300 (Part 1)-2001 Pruning]