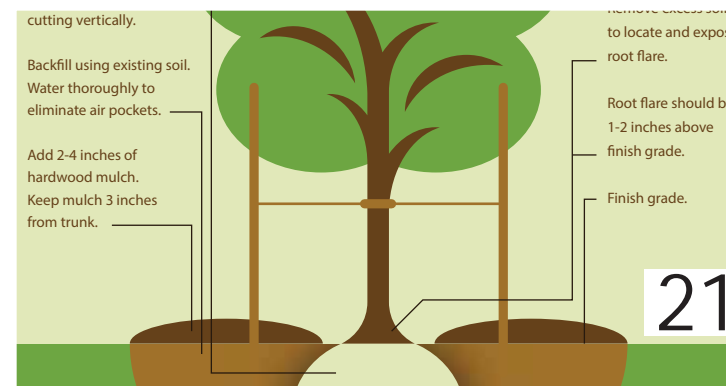




tree care MANUAL





tree care manual

The contents of this manual provide information to the community about the proper care and maintenance of public trees. This manual is intended for use by citizens, developers, landscape contractors, town staff, and utility companies for the planting and maintenance of Pendleton's public trees.



- 4 about
Learn about the creation of this manual, the history of the PUF Committee, and why we care about our public trees.
- 6 benefits
Learn some key facts regarding the benefit of trees in our community.
- 10 pendleton urban forestry
Read the committee's vision and mission.
- 13 definitions
"What does that word mean?"
- 14 tree selection considerations
The right tree in the right place at the right time.
- 18 planting
Learn the guidelines for planting new trees in the town's ROW and general planting methods.
- 22 new tree care
Watering, mulching, & staking, oh my!
- 24 pruning
- 27 tree removal
- 28 protection & preservation
- 30 approved street tree species
- 38 unapproved tree species
- 39 success and celebration

about

This tree care manual specifies the correct standards of practice for new tree plantings and the care of all trees in the Town of Pendleton, Indiana. This manual, which serves as an arborcultural specifications manual, was adopted from various bodies of work created by other regional and successful urban forestry organizations (including the City of Bloomington, the City of Carmel, the City of Fishers, among others).



It is important to note that in Pendleton’s existing conditions, many of our tree lawns, street trees, and other vegetation do not follow the guidelines set forth in this manual.

This manual is a proactive means to address new tree planting as well as the pruning, preservation, and protection of existing trees.

Except as written in the town’s ordinance or in situations deemed necessary by the town manager for public safety, tree selection and planting, tree care, pruning, tree removal, protection and preservation, and any other tree-related issues will be handled as outlined in this manual.

This manual was prepared by the Pendleton Urban Forestry Committee and approved by the Pendleton Town Council.

why care?

As the Indianapolis metropolitan area continues to expand, one is able to witness first-hand the tangible priority of municipalities to maintain, preserve, or develop green infrastructure ... green spaces & places. We see this as evidenced by the creation of walking trails, the preservation of natural spaces for public enjoyment, the creation of parks, the restoration of waterways, and more. But why? What does this do for a community? How does it strengthen a sense of place? Why is it even important?

Urban Planner, Ed McMahon suggests, “If you don’t know where you are, you don’t know who you are”. In this perspective, a community’s unique and valued environment is inextricably tied to its identity. Trees, and the creation/preservation of natural spaces that coexist with growing communities provide innumerable benefits both economically and for our quality of life.

Pendleton already has a rich history with the

preservation of green infrastructure. How different would our town be without its park? ... without its iconic and historic residential and business district? ... without its trees? ... without the mighty stands of sycamores we all know and love? ... without the large illustrious maples and oaks that line our streets?

It is no wonder that for many, a great sense of loss is felt when a stand of old growth forest (that maybe once accompanied our childhood!), is cut down for no apparent reason ... or when those who travel down Pendleton’s High Street on the town’s west side notice that a dozen of our once mighty Ash trees are no longer with us.

Trees add to the unique character and familiar essence of a place. When viewed as an amenity and properly cared for, Pendleton’s trees become assets that help identify the town we call home.

Join us to help preserve and care for Pendleton's trees.

history

A municipal tree ordinance to establish a Pendleton Urban Forestry Committee and to regulate the care of public trees has been in effect since 1993 in the Town of Pendleton.

The ordinance and manual were most recently updated and adopted in 2018. The ordinance stipulates that all work on trees that lie in the public right of way shall comply with the standards set forth in this manual.

While not mandatory, it is recommended that work on trees on private property (non-public) follow these standards to assure a safe and healthy environment for all the citizens of Pendleton.



benefits

the many benefits of trees

Trees are the building blocks of what experts call our urban forests: the living, breathing, life-sustaining part of our human habitat. When they're properly planted and cared for, they play an important role in supporting and improving the quality of life in urban areas. A tree's shade and beauty contributes to a community's quality of life and softens the often hard appearance of urban landscapes and streetscapes. When properly maintained, trees provide communities abundant environmental, economic, and social benefits that far exceed the time and money invested in planting, pruning, protection, and removal.

ENVIRONMENTAL BENEFITS

- Trees decrease energy consumption and moderate local climates by providing shade and acting as windbreaks.
- Trees act as mini-reservoirs, helping to slow and reduce the amount of stormwater runoff that reaches storm drains, rivers, and lakes. One hundred mature tree crowns intercept roughly 100,000 gallons of rainfall per year (U.S. Forest Service 2003a).
- Trees help reduce noise levels, cleanse atmospheric pollutants, produce oxygen, and absorb carbon dioxide.
- Trees can reduce street-level air pollution by up to 60% (Coder 1996). Lovasi (2008) suggested that children who live on tree-lined streets have lower rates of asthma.
- Trees stabilize soil and provide a habitat for wildlife.

ECONOMIC BENEFITS

- Trees in a yard or neighborhood increase residential property values by an average of 7%.
- Commercial property rental rates are 7% higher when trees are on the property (Wolf 2007).
- Trees moderate temperatures in the summer and winter, saving on heating and cooling expenses (North Carolina State University 2012, Heisler 1986).
- On average, consumers will pay about 11% more for goods in landscaped areas, with this figure being as high as 50% for convenience goods (Wolf 1998b, Wolf 1999, and Wolf 2003).
- Consumers also feel that the quality of products is better in business districts surrounded by trees than those considered barren (Wolf 1998b).
- The quality of landscaping along the routes leading to business districts had a positive influence on consumers' perceptions of the area (Wolf 2000).

SOCIAL BENEFITS

- Tree-lined streets are safer; traffic speeds and the amount of stress drivers feel are reduced, which likely reduces road rage/aggressive driving (Wolf 1998a, Kuo and Sullivan 2001a).
- Chicago apartment buildings with medium amounts of greenery had 42% fewer crimes than those without any trees (Kuo and Sullivan 2001b).

- Chicago apartment buildings with high levels of greenery had 52% fewer crimes than those without any trees (Kuo and Sullivan 2001a).
- Employees who see trees from their desks experience 23% less sick time and report greater job satisfaction than those who do not (Wolf 1998a).
- Hospital patients recovering from surgery who had a view of a grove of trees through their windows required fewer pain relievers, experienced fewer complications, and left the hospital sooner than similar patients who had a view of a brick wall (Ulrich 1984, 1986).
- When surrounded by trees, physical signs of personal stress, such as muscle tension and pulse rate, were measurably reduced within three to four minutes (Ulrich 1991).

the benefits of trees in Pendleton

The trees growing along the public streets and in parks constitute a valuable community resource. They provide numerous tangible and intangible benefits such as pollution control, energy reduction, stormwater management, property value increases, wildlife habitat, education, and aesthetics.

The services and benefits of trees in the urban and suburban setting were once considered to be unquantifiable. However, by using extensive scientific studies and practical research, these benefits can now be confidently calculated using tree inventory information.

The results of Pendleton's street tree inventory (conducted in 2016) provide insight into the overall health of the town's public trees and the management activities needed to maintain and increase the benefits of trees into the future.

- It is estimated that the 1700 inventoried street trees provide a total annual benefit of \$364,084! Essentially, \$364,084 was saved to cool buildings, manage stormwater, and clean the air.
- In addition, community aesthetics were improved and property values increased because of the presence of trees.

- Compared to the median values of five town benchmark communities used in the Sample Urban Statewide Inventory (Davey Resource Group 2009), Pendleton's benefit per tree of \$120.80 is more than the benchmark of \$52.31, and Pendleton's benefit per capita of \$85.67 is more than the benchmark of \$17.21.
- The assessment found that stormwater management benefits provided by Pendleton's trees returned the greatest value to the community. Stormwater management comprises 43% of the annual benefits provided by the inventoried trees. The Town's public trees intercepted over 5.8 million gallons of rainfall, which equates to a savings of \$157,228 in stormwater management costs.
- In addition to stormwater management savings, trees also play a major role in energy conservation and property value increases. The Town's trees mitigate the use of energy by \$80,166, compromising 22% of the annual benefits.
- The Town's public trees improve economic growth through aesthetics by \$91,926, compromising 25% of the annual benefits as well.
- Carbon and air quality contributions are also important and provide an annual benefit of \$15,230 (10% of the total benefits).

the benefits of trees in Pendleton (cont.)

AESTHETIC BENEFITS

The total annual benefit associated with property value increases and other tangible and intangible benefits of street trees was \$91,926. The average benefit per tree equaled \$30.50 per year.

STORMWATER BENEFITS

Trees intercept rainfall, which helps lower costs to manage stormwater runoff. The inventoried trees in Pendleton intercept 5,801,781 gallons of rainfall annually. On average, the estimated annual savings for the town in stormwater runoff management is \$157,228.

Of all species inventoried, *Acer saccharinum* (silver maple) contributed most of the annual stormwater benefits. The population of silver maples (8% of public trees) intercepted over 1.3 million gallons of rainfall. On a per-tree basis, large-statured trees with big canopies offer the greatest stormwater benefits. Northern hackberry (4% of the total population) absorbed 325,477 gallons of rainfall. In comparison, eastern redbud comprised approximately 5% of the total population, absorbing 16,877 gallons of rainfall.

AIR QUALITY IMPROVEMENTS

The inventoried tree population annually removes 1,570 pounds of air pollutants (including ozone, nitrogen dioxide, sulfur dioxide, and particulate matter) through deposition. The population also avoids 5,897 pounds annually.

While trees do a great deal to absorb air pollutants, they also contribute negatively to air pollution. Trees emit various biogenic volatile organic compounds (BVOC's) such as isoprenes and monoterpenes, which can also contribute to formation of ozone, a harmful gas that pollutes the air and damages vegetation. These BVOC emissions are accounted for in the air quality net benefit.

The inventoried trees removed or avoided more

pollutants than they emitted, resulting in a positive economic value. The net total value of these benefits is estimated to be \$19,534. The trees that provided the most benefits based on an annual per-tree average value were *Populus alba* (white poplar) and *Catalpa speciosa* (northern catalpa) (\$15.71 and \$14.87, respectively). White poplar is an invasive tree species.

CARBON STORAGE/SEQUESTRATION

Trees absorb CO2 and sequester some during growth (Nowak et al. 2013). This prevents CO2 from reaching the upper atmosphere, where it can react with other compounds and form harmful gases like ozone, which adversely affects air quality.

The Town's public trees sequester 602 tons of CO2 per year. Through sequestration and avoidance, 465 tons of CO2 are removed each year. Silver maple provided the most CO2 benefits, with each tree sequestering an annual average of \$14.26 worth of carbon.

ENERGY BENEFITS

Public trees conserve energy by shading structures and surfaces, which reduces electricity use for air conditioning in the summer. Trees divert wind in the winter to reduce natural gas use. Based on the inventoried trees, the annual electric and natural gas savings are equivalent to 555 MWh of electricity and 74,562 therms of natural gas, which accounts for an annual savings of \$80,166 in energy consumption.

Large leafy canopies are valuable because they provide shade, which reduces energy usage. White ash, silver maple, northern hackberry, and *Quercus macrocarpa* (bur oak) all have annual values per tree greater than \$31. Smaller species such as eastern redbud, *Malus* spp. (crabapple spp.), *Pyrus calleryana* (callery pear), *Prunus* spp. (cherry spp.), *Cornus florida* (flowering dogwood), and *Syringa japonica* (Japanese tree lilac) all have annual per-tree values between \$2.90 and \$9.60 per tree.



THIS "ONE" TREE IN PENDLETON HAS...



...INCREDIBLE ENVIRONMENTAL, ECONOMIC, & SOCIAL BENEFITS.

pendleton urban forestry

vision

The Town of Pendleton's Urban Forestry Committee envisions a future of the urban forest as a healthy, diverse, colorful, display of canopy trees lining the streets and throughout our town, which provides an environment which not only beautifies our town, but also increases our town's economic vitality, improves our air quality, buffers noise, moderates temperatures, decreases stormwater runoff, sustains wildlife, and is accessible to every resident.

mission

The mission of the Pendleton Urban Forestry Committee is to assist, advise, and develop urban forestry programs for the Town of Pendleton and its citizens; while also helping direct a well funded, cost-effective program and to attract different sources of funding. Through their efforts, the committee will continually update and modify the urban forestry program as well as participate in activities that emphasize education and maintenance of the Pendleton Urban Forest.

The Committee views the responsibility for improving Pendleton's Urban Forest as a joint venture between government and citizens, and therefore is committed to providing outreach and education to our citizens to ensure this partnership is successful.

The Pendleton Urban Forestry Committee meets monthly at Pendleton Town Hall, located at 100 West State Street. The Committee is a board composed of seven members who are appointed by the Pendleton Town Council.

goals & objectives

1. Assure sustained funding and continue to increase funding of the community forestry program.

- Raise per capita funding each year.
- Provide necessary funding for enforcement of the town's tree ordinances and regulations.
- Utilize multiple sources of funding (budget, grants, non-profit organizations, sales, corporate donations, trust fund, in kind labor, partnerships).

2. Create public involvement in Urban Forestry.

- Develop a participatory street tree program, and promote off-street planting for neighborhoods.
- Promote community forest curriculum elements within the public schools. Undertake an active program of community outreach and education, including development of a Pendleton Urban Forestry web page.
- Use all cost effective means to promote programs (press releases, brochures, banners, website, displays, etc.).
- Acknowledge citizens who volunteer in helping the urban forestry program.

3. Establish and promote the highest standards of maintenance for the Pendleton Urban Forest.

- Review and update the Tree Care Manual annually.

4. Advocate continuing development of a healthy urban forest in Pendleton.

- Achieve a minimum 50% canopy coverage of all streets.
- Replace every tree removed from a street with at least one new tree.
- Use and promote species well adapted to local environmental and design objectives.
- Achieve a diverse forest with no one introduced species comprising more than 10% of the whole or 25% of any one neighborhood.
- Develop diverse and distinctive plantings along major streets and neighborhoods.

5. Continue to help Pendleton be a desirable location for business and home by strengthening its successful and recognized urban forestry program.

- Achievement of the Tree City USA award annually.
- Improvement and updating of the Pendleton Tree Care Manual by remaining knowledgeable regarding improvements in plant science, technology, and long range planning.
- Involvement of committee members and Pendleton staff in State and National Urban Forestry organizations.



key definitions

street tree (public tree)

Any tree with 51% or more of its trunk within the public right-of-way. A tree that is located on town property, public right-of-way or easements within the Town of Pendleton.

right-of-way (ROW)

Improved or unimproved public property owned by, dedicated to, or deeded to, the public or for the public's use, for the purpose of providing vehicular, pedestrian, and other public use. Such public property includes, but is not limited to, streets, alleys, sidewalks, easements for public utilities, cut and fill slopes, and public open space.

tree lawn

The area within the street right-of-way that can be landscaped including: medians, the center of traffic circles, the space between the street and the sidewalk, or between a parking lot and the street.

native

Trees that were growing primarily in the eastern united states when Europeans stepped on the shores.

introduced (non-native/exotic)

Defines anything that was not growing in a given area originally.



tree selection considerations

- SELECTING & PLANTING TREES
- NATIVE VS. INTRODUCED TREES
- TREE TYPES
- TREE SIZES
- STREET/PUBLIC TREES



selecting & planting trees

The Town of Pendleton strives to have many beautiful trees gracing its streets, but trees need to coexist in a safe manner with public infrastructure like utility lines, streets, sidewalks, buildings, and signs. Planting the right tree in the right place is key to having a successful urban forest.

Before planting any tree, look around to see how much room a tree would have to grow to mature size. Look at the space between the sidewalk and street (tree lawn), and above for power lines, phone lines, or street lights that should not be blocked. Be sure to pick the right size tree both for the location you are planting and for the size of buildings near the tree. Consider tree color

both in spring and fall, the scale of the planting, and the final shape of a tree in designing your planting area.

Trees can be planted any time the ground can be worked. Spring is a good time to plant, while trees are not yet leafed out and newly planted trees can benefit from spring moisture. Late fall planting also allows roots to be established while trees benefit from winter moisture. Containerized trees can be planted in summer, as they have good root systems. Freshness and pre-planting care of tree stock are important for survival, as is weekly post-planting watering for a full growing season. Buy only quality trees that are

healthy, well pruned, and have a strong central trunk. Bargain trees that have been left in hot sun or cold wind to dry out are not bargains when they die.

Always CALL 811 BEFORE YOU DIG!

Indiana law requires all property owners to call 811 before digging. This is a free service allowing utility professionals to mark all buried electric, gas, water, sewer, cable, and telephone lines for your safety; however, it is the caller's responsibility to know the location of all privately-owned equipment, including but not limited to, buried liquid petroleum (LP) gas lines, pet fences, septic lines, and wiring for outdoor lighting.

native vs. introduced

When selecting trees for your home or along your street, there are a few basic facts you will need to make your selection. Understanding the type or species of tree you wish to plant is the first step in the selection process.

NATIVE vs. NON-NATIVE (EXOTIC)

For the purposes of this manual, "native" describes the trees that were growing primarily in the eastern United States when Europeans stepped on the shores.

Native plants have had centuries to hone their survival tactics against local temperature swings, bug infestations, and diseases. Their roots have developed strategies to obtain nutrients and stability from their native surroundings. Native plants are programmed to thrive in their home region. Because of these qualities, native plants are easier to establish in the landscape; are resistant to local insects and diseases; and require less maintenance, water, fertilizers, and pesticides.

Since native plants are so well adapted, why choose to plant an 'introduced' species? One reason might be to avoid problems with an insect or disease currently plaguing the native variety.

A good example of this is the flowering dogwood (*Cornus florida*), a popular native plant throughout

If planting a tree next to the street on public property, you must first obtain a Tree Work Permit from the Pendleton Planning Department. This assures that the Department can approve the siting of the tree and make sure that an appropriate tree species is selected. This will also assure that the tree is logged into the public tree inventory database.



most of the eastern United States. This natural beauty has recently been plagued with a deadly fungal disease (anthracnose) and the disease is taking a toll in the forests and the homeowner's yard.

Many homeowners are turning to the introduced kousa dogwood (*Cornus kousa*), a native of Asia, as an alternative. It is resistant to the deadly anthracnose. (In the plant world, the term "introduced or exotic" defines anything that was not growing in a given area originally. That would make plants indigenous to the eastern United States introduced/exotic in the western part, although all may be native to North America.)

However, some introduced plants become invasive and can be a problem. Examples are Norway maple (*Acer platanoides*) and Callery pear (*Pyrus calleryana*) which quickly displace native species as they invade natural areas. These plants should not be planted, and if found existing in an area, should be removed.

This manual provides a list of prohibited trees due to their invasiveness. For more information about plants to avoid, visit the Indiana Department of Natural Resources website and search for "invasive plant species".

the right tree type

It is important to know the botanical (or scientific) name to ensure you get the right plant. The botanical name usually appears in italics and is very specific to a particular plant. Botanical names matter because a common name may refer to several different plants.

In the example of the dogwood, *Cornus florida* is the botanical name for the species, which has white flowers and strong horizontal branching.



Plants can be further identified by cultivars. Again using the dogwood as an example, 'Cherokee Princess' (*Cornis florida*) is a popular cultivar with white flowers and a more upright growth habit. Cultivars are usually shown in single quotes.

the right tree size

Selecting the right plant for the location will save the homeowner a lot of maintenance headaches and allow the tree to thrive and mature with all of its grace and beauty in tact.

Begin by considering the site and the size tree it will accommodate. A vast open space without interference from utility lines, roofs or driveways will handle large trees. Small urban yards are better planted with trees that stay fairly narrow and not too tall.

Small Trees are those up to 25 feet tall. Crabapple (*Malus*) and eastern redbud (*Cercis canadensis*) are examples.

Medium Trees are those 25 -50 feet tall. These include 'Winter King' hawthorne (*Crategus tricanthos*), 'Skyline' honeylocust (*Gleditsia tricanthos*) and American hornbeam (*Carpus caroliniana*).

Large Trees are those reaching 50 feet or more. American beech (*Fagus grandiflora*), sugar maple (*Acer saccharum*), sweet gum (*Liquidambar styraciflua*) and most of the oaks (*Quercus*) make up this category.

street/public trees for pendleton

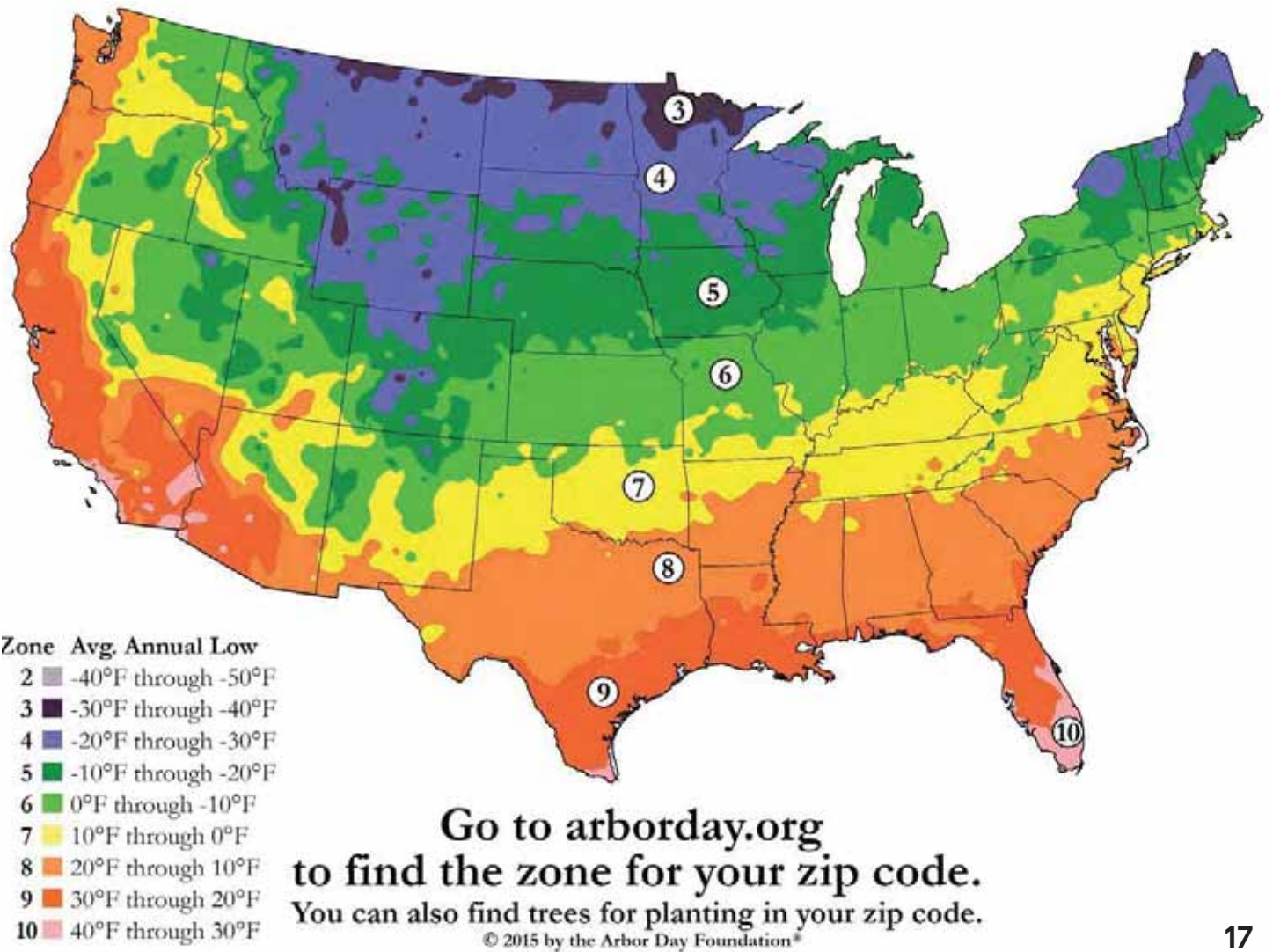
This manual contains the approved street tree species list (pages 32-37) which is a list of tree types that are suitable for planting in Pendleton's climate (zone 5-6).

As described before, trees are grouped into three size classes --- small, medium, and large --- based on their mature size. Tree species that appear in this list are also adapted to urban stresses such as road salt, limited grow spaces, and poor soils.

The size should be chosen based on the growing space of the planting area. To determine what size planting space you have, refer to the "Distance from Infrastructure" section in each list (page 31). If you have a small growing space, choose a tree from the small tree type list; a medium space, a medium tree type; and a large space, a large tree type.

Also included is a list of undesirable trees (page 38) for planting in Pendleton. These tree species usually have disease, pest, or litter problems that make them unsuitable in urban areas. Some species of trees are invasive in the natural environment due to prolific seeding or root sprouting and as a result should not be planted. The planting of monocultures of trees (lots of the same kind of tree) is discouraged because of potential insect and disease problems.

The Pendleton Urban Forestry Committee highly encourages the use of native tree species from these lists (pages 32-37).



planting

GUIDELINES

RIGHT OF WAY

METHODS



planting guidelines

The Town of Pendleton encourages species and age class diversity in managing our street trees. Plantings with a variety of trees are not subject to large scale losses from disease or natural life cycles. The town's policy for public trees is to plant “the right tree in the right place at the right time.”

Site factors to be considered are:

- the type of location to be planted (natural or developed area)
- the mature height and width of the tree
- the size of the planting strip or tree lawn
- the presence of overhead wires

Public trees should not be planted where they will obstruct or interfere with buildings or public

improvements, or interfere with traffic or public safety. Public trees should not be planted in the following places unless approved by the town manager:

- Within 2' of an existing curb face
- Within 4' of any building or structure
- Within 4' of a meter vault box
- Within 4' of residential driveways, or 6' of commercial driveways
- Within 10' of fire hydrants and utility poles
- Within 10' of a public sanitary sewer, water line or sprinkler head
- Within 10' of an alleyway access
- Within 20' of street light standards
- Within 20' in front of a stop or yield sign
- Within 25' of any street/road/alley/drive/etc. intersection

ESTABLISHED AREAS

New street tree plantings are at the discretion of the individual property owner acting in accordance with this Tree Care Manual.

Property owners are encouraged to consider existing trees and landscaping when choosing trees to plant (refer to previous section).

NEW DEVELOPMENT

During its review of the development plans, the town's Planning Department will ensure Town guidelines are met for the number and type of trees to be planted.

PUBLIC PROJECTS

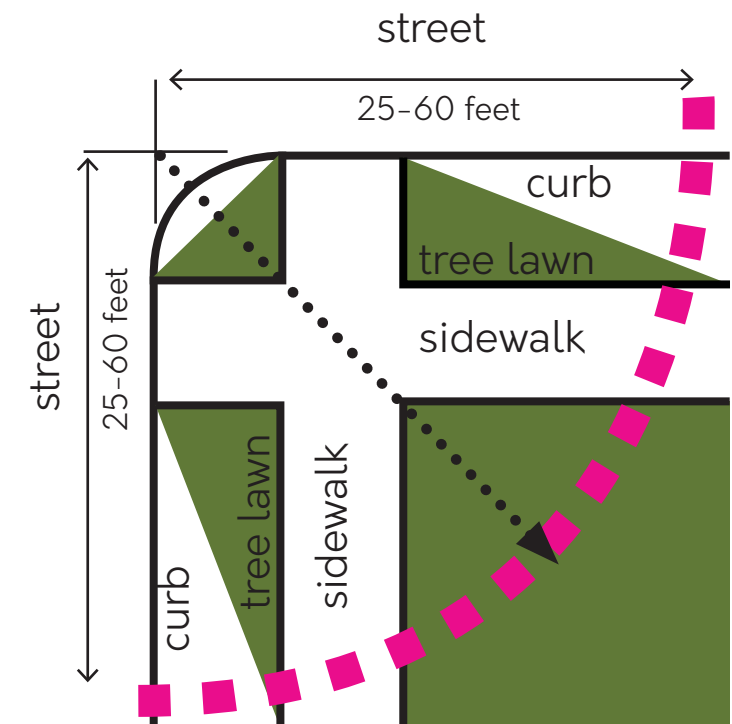
All public projects will follow these standards:

- All trees and shrubs near streets must comply with vision clearance standards. Any new tree may not be planted within a 25' triangle at intersections, except where engineering standards indicate otherwise.
- All street trees that are removed must be replaced, unless otherwise approved by the town manager.
- The minimum sizes for trees to be planted in rights-of-way are 1 1/2-inch caliper, unless otherwise approved by the town manager.
- Containerized or ball and burlap stock may be used for public trees. The person (or other entity) that planted the tree is responsible for replacing the tree if it dies within three years.

planting & vision clearance in the right-of-way (ROW)

Placement guidelines for trees planted in relation to adjacent infrastructure are listed for each tree size class in the “Distance from Infrastructure” sections of the approved street tree species list (page 31). Further, unless otherwise sanctioned by the Pendleton Urban Forestry Committee, the following standards will apply to trees or shrubs planted in the public right of way:

- No vegetation (shrub/grasses/etc.) which reaches a mature height of between 2 and 8 feet shall be planted in the public right of way within 50 feet of the intersecting curb lines of a street corner.
- No new tree shall be planted closer than 25 feet from the intersecting curb lines of a street corner on streets designated as local streets, 35 feet on streets designated as collector streets, and 60 feet on state highways or other arterial streets.



planting methods

PLEASE CONTACT...

Contact the free public service utility locate company at least 2 working days before breaking ground. While many utilities may be observed overhead, still other utilities exist below ground. Underground utilities such as natural gas, electric, or fiber-optic cable will be painted or flagged in the vicinity of your digging area. This locate service will also mark underground water and sewer lines in the public right of way area.

If planting a tree next to the street on public property, you must first obtain a Tree Work Permit from the Pendleton Planning Department. This assures that the Town can approve the siting of the tree and make sure that an appropriate tree species is selected. This will also assure that the tree is logged into the public tree inventory database.

- **All planting holes should be one and a half to two times the diameter of the root ball of the tree.** Dig the hole only to the depth of the roots. The tree should be centered in the hole and positioned so that the root flair is at or slightly above soil level.
- **Remove all wire baskets, burlap, containers, twine, tags, wire or tree wrap to the maximum extent possible.** Straighten any circling roots (container stock).
- **Backfill the hole to half full then saturate with five gallons or more of water to fill all holes and cavities around the roots.** Finish filling the hole and slowly water again with another 5 gallons, or more. More soil may be need to be added after the water has drained and the fill has settled.
- **Cover the tree ring area of the newly planted tree with 2-4 inches of aged woody organic mulch material.** The mulch should be pulled 3 inches back from the trunk of the tree. Bark, wood chips, or recycled composted and screened yard debris are recommended mulch materials.

QUALITY OF PLANT MATERIALS

High quality plant materials are desired for plantings. The minimum acceptable standard for plant materials shall conform to the American Association of Nurserymen’s American Standard For Nursery Stock, (ANSI Z60.1 – 2004) and will be true to name and type. Broken, damaged, diseased, or substandard tree stock will not be allowed to be planted in the right-of-way. Trees planted must be free from bark damage, decay, sunscald, insect pests, or other objectionable disfigurements.

QUALITY OF WORK

The best time to plant trees is spring or late fall when the trees are dormant. Ball and burlap or containerized stock may be planted successfully most of the year except during very hot and dry periods of the summer.

Handle tree stock carefully, to avoid causing damage during planting. If any bark is damaged or branches broken during planting, the damage should be properly treated immediately. Trees that are so badly damaged that it is doubtful they will survive or grow properly must be replaced.

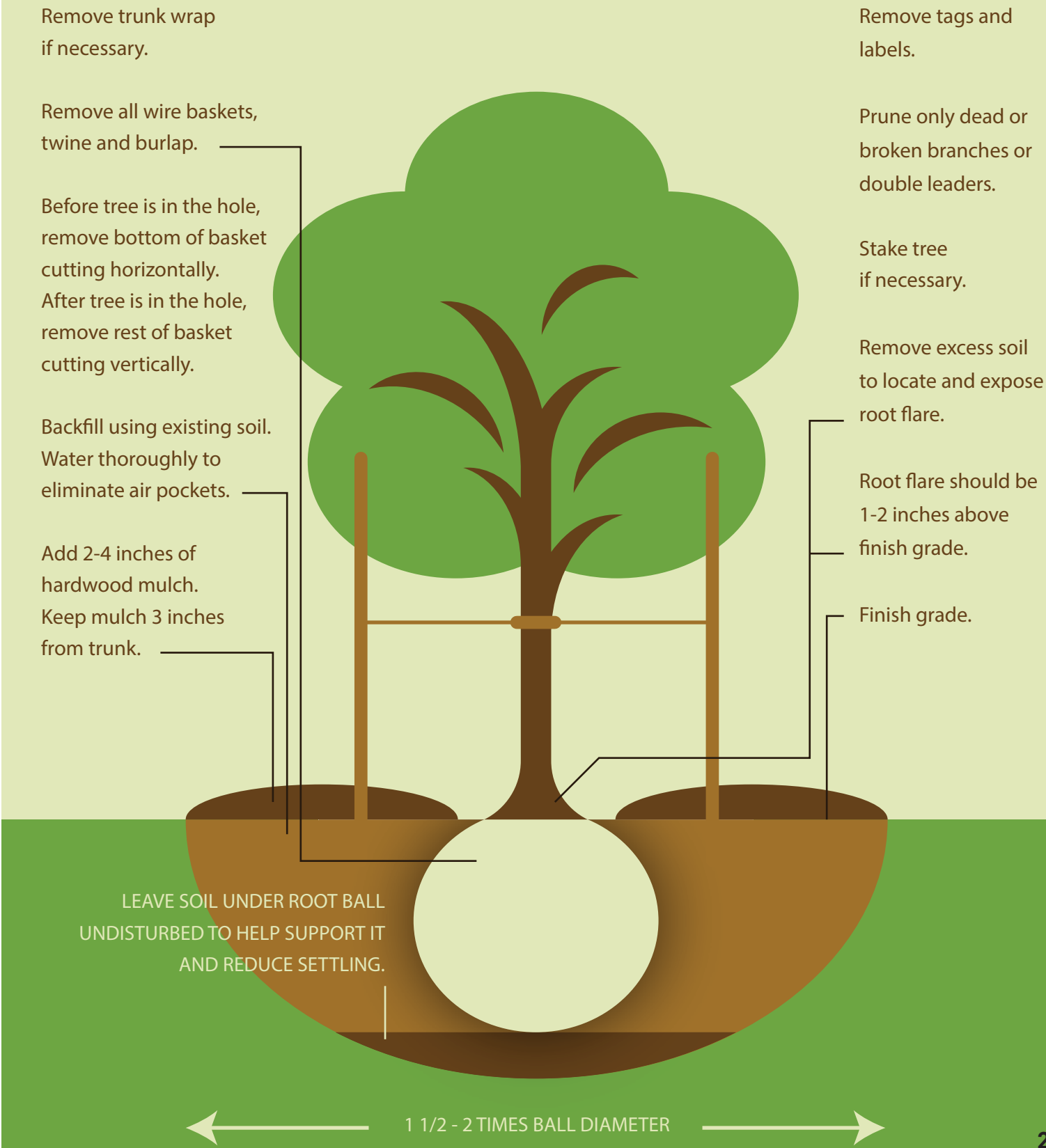
Do not cause a public hazard while planting a street tree. Make sure to barricade open planting holes if they are left unattended, clean up debris promptly, and keep access corridors clear.

ACCEPTANCE

All street tree plantings must be in accordance with this manual unless otherwise authorized by the town manager.

Unacceptable planting must be corrected to the standards of this manual. If the corrective measures are done by the town, the costs will be charged to the contractor, landowner, or the primary developer of the project.

DECIDUOUS TREE PLANTING DETAIL



new tree care

new tree care guidelines

WATERING

New trees should be thoroughly watered every five to ten days from April through October as needed as a supplement to natural rainfall. Plants should receive a total of two inches of water every two weeks, or about 10 gallons per two-inch caliper tree. Watering is critical when summer temperatures exceed 90° F for extended days. New trees should be supplementally watered for three years after planting.



FERTILIZING

Fertilizing is not usually necessary. At planting time, a high phosphorus “root stimulator” type fertilizer can be poured over the roots. If at any time the tree appears stressed, a water-soluble fertilizer like Miracle-Gro® can be watered in.

PRUNING

Newly planted trees should be pruned only as needed to remove dead, damaged, or poorly located limbs. After trees are established, usually a minimum of three years, structure pruning is recommended to promote a strong central tree leader and to remove lower branches as needed for clearance.



WRAPPING

Only thin-barked trees such as young maples, linden, beech, and tulip poplars, which are subject to sunscald, should be protected November through April with specialty paper tree wrap material. Never use tape or plastic material. All wrapping should be removed during the growing season. Open bark wounds should not be wrapped but, instead, the bark should be trimmed cleanly and left open to air circulation. If the wound is fresh and the bark still partially attached, the bark can be pressed in place and gently wrapped to graft back in place.

STAKING

Only those trees in windy, open area, along floodplains, or with loose root balls should be staked to prevent movement of the base of the tree at the roots. Freedom of movement in a tree trunk helps a tree develop a stronger trunk. If staking, avoid cutting roots while driving the stake, or damaging bark with any rope or wire used. All staking materials should be removed after one year from installation.



MULCHING

Mulch should be applied at time of planting and reapplied annually in the spring. Mulch a depth of 2-4 inches for a minimum two-foot radius around the tree. Do not pile mulch against the trunk. Instead, keep mulch two to three inches away from the trunk. Recommended mulch is shredded bark or aged wood chips.



pruning

pruning guidelines

The following regulations apply to tree pruning activities on public street trees, whether done by the individual or his/her contracted agent.

Any citizen pruning a public street tree by removing branches over three (3) inches diameter in size is required to obtain a Tree Work Permit from the Pendleton Planning Department prior to pruning activities.

Trees must not be pruned in a way that will endanger their health.

Branches and foliage of street trees must not interfere with safe public passage. They should be pruned so that clearance over streets is at least 15 feet and at least 8 feet over pedestrian areas.

Remove sprouts and suckers growing on the trunk to at least 8 feet above the ground.

When dead or broken limbs endanger the public or property, they must be promptly and properly removed. It is not necessary to get authorization prior to the work when the pruning is needed immediately for safety.

To protect the future welfare of the tree, any pruning of the roots of a street tree must have prior approval from the town.

METHODS OF PRUNING

Public trees are to be pruned by an International Society of Arboriculture Certified Arborist unless otherwise approved by the town manager.

Proper pruning techniques and practices will be used, as set forth in the Tree Pruning Guidelines prepared

by the International Society of Arboriculture (ISA).

APPROVED PRUNING TECHNIQUES

These techniques should be used, for whatever the pruning goals.

Crown Cleaning is the removal of dead, dying, or diseased, crowned, weakly attached, and low-vigor branches from the crown of a tree.

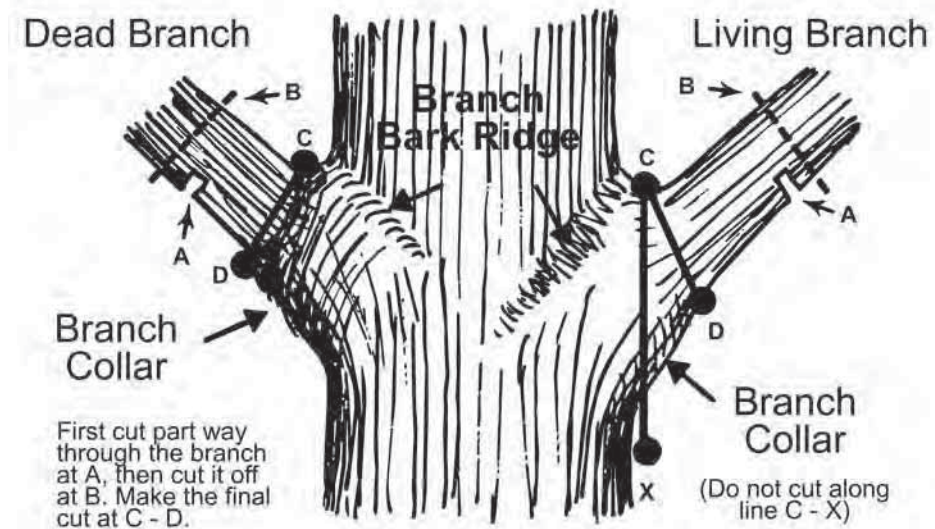
Crown Thinning is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree, reduces weight on heavy limbs, and helps retain the tree's natural shape.

Crown Raising removes the lower branches from a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas.

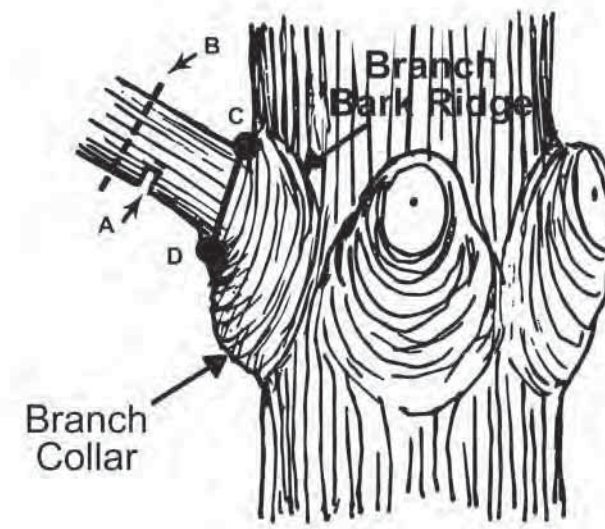
Crown Reduction reduces the size of a tree, often for clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminal roles (at least 1/3 the diameter of the cut stem).

Topping is an unacceptable arboriculture practice and is strictly prohibited.

Proper Pruning Principles



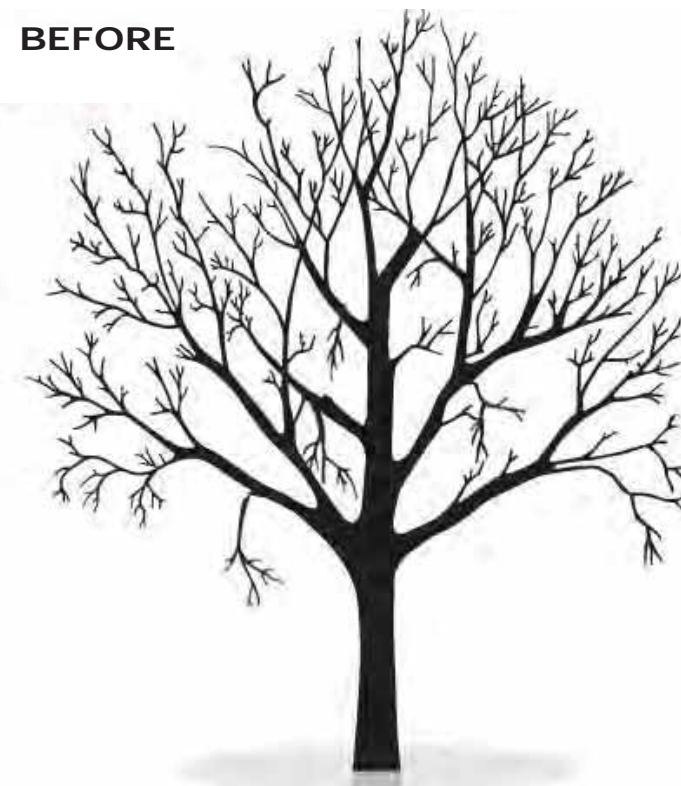
Hardwoods



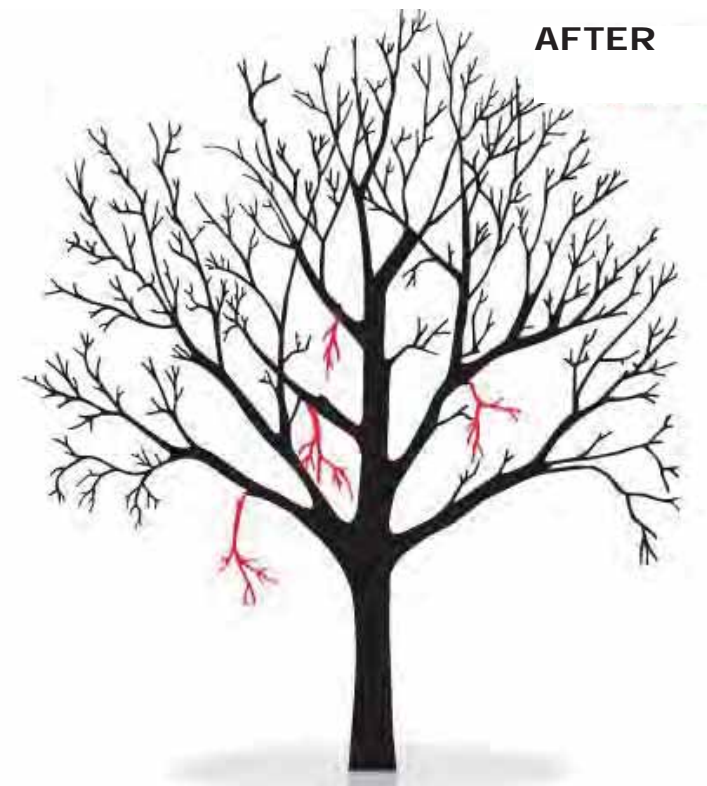
Conifers



BEFORE



AFTER



NO TREE TOPPING ALLOWED

Topping is defined as the severe cutting back of major limbs to stubs larger than three inches in diameter within the tree’s crown to such a degree as to remove the normal canopy and disfigure the tree.

To prevent the need for topping, start out by planting the right trees that will fit the available space. Begin pruning early to modify the structure of a tree as needed. Pruning early in the life of a tree can prevent the need for expensive mature tree pruning.

EIGHT GOOD REASONS NOT TO TOP A TREE

- Cost
- Ugliness
- Insects and diseases
- Tree starvation
- Weak limbs
- Rapid new growth
- Tree shock
- Tree death

More about topping and alternate pruning techniques at: www.treesaregood.com/treecare

QUALITY OF WORK/PRUNING

Make all final pruning cuts in a way that encourages natural callus growth to cover the wound (Just outside the branch collar – refer to “C” in previous image)

Make all final pruning cuts in a way that prevents the bark and wood from tearing back (refer to A – C in previous image).

Use sharp and clean tools. Disinfect tools when working with trees that have infectious disease.

Clean up branches, logs, or any other debris promptly.

The use of climbing spurs or spike shoes on public trees is prohibited.

Never leave any severed or partially cut branches in the canopy of the tree.

CHOOSING AN ARBORIST

Why hire an arborist? An arborist is a specialist in the care of individual trees. Arborists are knowledgeable about the needs of trees and are trained and equipped to provide proper care. Hiring an arborist is a decision that should not be taken lightly. Proper tree care is an investment that can lead to substantial returns. Well-cared-for trees are attractive and can add considerable value to your property. Poorly maintained trees can be a significant liability. Pruning or removing trees, especially large trees, can be dangerous work. Tree work should be done only by those trained and equipped to work safely in trees.

Find a Certified Arborist
www.isa-arbor.com



tree removal

removal guidelines

All tree removals on public property must be approved by the town manager. If the town manager does not agree with the removal of a right-of-way tree but the adjacent controller insists on removing the tree, the tree will be appraised and the appraised value of the tree will be assessed to the landowner.

PUBLIC SAFETY

Proper safety procedures are required to ensure public safety when removing trees.

Signage, flagging and other public safety practices should follow Indiana Code.

QUALITY OF WORK

All debris must be removed from the sidewalk and street as soon as possible.

Merchantable trees or firewood material will be removed at a time which is agreeable to both the landowner and the town manager. All other debris must be removed by the end of the day it is produced.

The stump and primary roots must be ground to at least six inches below the soil surface. The time period for grinding will be determined by the landowner and the town manager. To prevent a public safety hazard, the stump hole must be back filled immediately after the grinding.

REPLACEMENT POLICY

Replacement of a public tree shall be required when removal of a public tree occurs.

TREE REMOVALS STANDARDS

- All removals of street trees shall require a Tree Work Permit from the Pendleton Planning Department. Persons performing tree removals must meet all insurance and bonding requirements set forth in the Tree Ordinance.
- Appropriate street and sidewalk barriers shall be placed where removals may endanger the public. The Pendleton Planning Department shall be notified about any street blockages.
- Care shall be taken in dropping trees to prevent sidewalk and curb damage.
- The stumps of all trees shall be removed to at least six inches below ground level and the cavity shall be filled with soil and leveled.



protection & preservation

protection guidelines

NEW TREE HANDLING, INSPECTION, AND STORAGE

Only desirable, long-lived trees of good appearance, beauty, adaptability, and generally free from injurious insects and diseases shall be planted on public sites. Any trees planted shall be adaptable to USDA Zone 5-6 climate conditions.

Trees shall be tagged, indicating species and size. Trees shall be free of wounds, insects, and cankers.

Root systems should be full and root balls should be full and root balls should be moist, but not moldy. Trees in containers should not have encircling roots. Root balls should be protected from freezing and drying out.

Plants should be protected from wind during transport and be kept cool and moist at all times. Care should be taken to not drop or otherwise loosen the root ball. Trees should not be picked up by the trunk. Instead, the soil ball should be supported when moving the plant.

Bare-rooted plants must be planted when dormant (buds are closed and not leafed out). Roots should always be kept cool and moist and trees planted as soon as possible.

If stored, the trees should be covered with moist soil, straw, or wood chips. Bare-rooted trees should be soaked in water immediately prior to planting.

PLANTED & EXISTING TREE PROTECTION

Abusing or destroying any public tree is prohibited under Pendleton Municipal Code Section 96.09. This includes breaking stakes or supports for a public tree, burning or encouraging any burning near the trunk, defacing it, or attaching signs or notices, nails, screws, or other such devices.

NOTIFY THE PLANNING DEPARTMENT BEFORE:

- Attaching or installing any metal materials, cable, wires or other foreign objects to public trees.
- Excavating soil or trenches, or filling soil within the drip line of a public tree.
- Treating the soil within the root zone of a public tree with a soil sterilant.

PROTECTION DURING CONSTRUCTION

Site or landscape plans for any development should show all existing public trees to be saved and those to be removed should be marked on the plans.

Every effort should be made to preserve desirable trees. The Pendleton Urban Forestry Committee will provide information about appropriate ways of preserving the trees.

Public trees to be saved should be marked prominently during the construction, repair, alteration, or removal of any building or structure. When the trunks of saved trees are likely to be damaged, they should be protected with fencing. To avoid soil compaction around the root zones, fencing should include the area under the drip line of the trees (see figures below).

Any trenching within the drip line of public trees must be done by hand to tunnel under and preserve the main support roots (see figures below).

Curb cuts should not be closer than 6 feet from the trunk of the tree. Paving should be at least 2 1/2 feet from the tree trunk.

Avoid cutting surface roots wherever possible. Sidewalks and paving should be designed to avoid such damage.

Avoid disturbing the soil within the drip line of trees such as removing the top soil, compacting the soil or adding fill dirt.

Excavation or trenching requiring root cuts should be done rapidly to minimize drying out the cut root. Make smooth, flush cuts on tree roots. Back fill before the roots have a chance to dry out, and water the tree immediately. Irrigation may be necessary throughout the hot and dry summer season.

In the interest of preserving public trees, the Public Works Department will coordinate with Planning Department by notifying them of any applications for new curb, gutter, walkway or driveway installations, or other improvements which might require the removal of, or cause injury to, any public tree, or interfere with the goals of the town's street tree plan.

PROTECTING TREE ROOTS & CRITICAL ROOT ZONE (CRZ)

If a tree's roots are damaged, the tree is damaged and may succumb to an early death. Trees usually decline slowly and begin showing stress with dying tips of branches in the canopy. While roots extend well beyond the drop line or edge of the tree's canopy, there is a root area that needs special protection – the Critical Root Zone (CRZ). This is defined as a circular region measured outward from the tree's trunk representing the essential area of the roots that must be maintained or protected for the tree's survival. CRZ is a one-foot radial distance for every inch of tree diameter at breast height (DBH), with a minimum distance of eight feet. For very special trees, the formula changes to 1 foot for every inch of DBH.

