

*City of Bowling Green, Ohio  
Landscape Guide for Developers,  
Businesses and Home Owners*



**Cul-de-sac planting in Stone Ridge Subdivision**



***City of Bowling Green, Ohio  
Landscape Guide for Developers,  
Businesses and Home Owners***

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Prepared For:

John B. Quinn, Mayor  
City Council Members  
John Fawcett, Municipal Administrator  
Lori Tretter, Assistant Municipal Administrator  
Brian Craft, Public Works Director  
Kevin Maynard, Utilities Director  
Michelle Grigore, Parks & Recreation Director  
Rick Ketzenbarger, Planning Director  
Brian O'Connell, City Engineer

Prepared by:

David S. Bienemann  
Municipal Arborist

## ***Acknowledgement***

Bowling Green Tree Commission  
City of Bowling Green  
304 N. Church Street  
Bowling Green, Ohio 43402

Kent Reichert, Public Works  
City of Bowling Green  
304 N. Church Street  
Bowling Green, OH 43402

Stephanie Miller, Regional Urban Forester  
ODNR Division of Forestry  
952-B Lima Avenue  
Findlay, Ohio 45840

Bostdorff, Greenhouse Acres, LTD.  
18862 N. Dixie Highway  
Bowling Green, Ohio 43402

North Branch Nursery  
P.O. Box 353  
3359 Kesson Road  
Pemberville, Ohio 43450

Klotz Garden Center  
906 E. Napoleon Road  
Bowling Green, Ohio 43402

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## Introduction

The City of Bowling Green has received a Tree City USA designation for 29 years and has been a Growth Award recipient for 16 years. Trees are integral part of Bowling Green community since the days of the Great Black Swamp. Large trees provide energy conservation, cleaner air, stormwater management, carbon storage, wildlife habitat and aesthetic benefits to the city. The older established trees provide immediate benefits and are one of the community's best investments.

One of the urban forestry program goals is enhance the street tree program in the City. This can be accomplished through planting the right tree in the right place. The objective is to plant a tree that will survive the urban environment and live to maturity to provide the maximum possible benefits to the generations. Trees require long-term care and maintenance to keep them healthy and functional.

Native soils are dramatically impacted through the construction process. Top soils are removed and set aside. The remaining subsoil is graded and contoured to meet the stormwater retention requirements. Compacted soil is the number one reason for new tree planting mortality.

Underground utilities (gas, water, sewer, cable TV, Phone) exist in the public rights-of-way and extend to the home or business. Trees are often needlessly removed because they were planted above or in close proximity to an underground utility that requires maintenance or needs repaired.

Construction damage to the critical root zone or to the living parts of the tree is another cause for tree mortality. Most of the roots of trees are in the upper 18 inches of soil. The feeder roots which take up water and nutrients for the trees are in the upper 6 inches of soil. Tree roots can only grow where they can move through soil and receive oxygen. Construction protection is required to save trees.

**The City of Bowling Green seeks its residents, businesses and developers on how important trees are to our community and encourage commitment to this investment in the long-term care and maintenance.**

# Tree Selection

## Street Tree List

The City of Bowling Green has approximately 119 different species of trees growing in public rights-of-way and city-owned green spaces. Soils in this area are typically high in pH, shallow, clay-based and drain poorly. Within the City there are pockets of sand moraines and sandy clay loam created from the glaciers of the past. Most trees that grow native in Bowling Green are able to tolerate high pH, high winds, drought, and flooding.

It is important to note that City Ordinance, Chapter 99 Trees and Weeds, prohibits trees that are weak wooded, prone to storm damage, or produce fruit or nuts to be planted in public rights-of-way and city-owned green spaces. For example, any type of fruit tree variety bred for fruit production is not allowed such as apple, pear, or peach trees. A list of prohibited trees that cannot be planted in public rights-of-way is discussed in **Appendix A**.

The City of Bowling Green has an approved Street Tree List that is based on research and expertise of Ohio State University Extension, ODNR Division of Forestry, Municipal Arborists and Landscape Nursery Suppliers in Northwest Ohio. The Street Tree List is in **Appendix B**.

Prior to going out and purchasing a tree, shrub, or plant, the soil type in planting area should be determined. A poorly selected tree, shrub, or plant will be doomed if it's not suitable for the soil in which it is being planted.

Large tree species are defined as any tree that grows more than 40 feet tall and 30 feet wide. Large trees require a minimum space of 8 x 8 square feet in the public rights-of-way to grow properly. For example, American elm, swamp white oak, and sugar maple are large growing tree species (**Figure 1**). Large trees shall be planted a minimum of 50 feet apart.

Medium tree species are trees that grow between 25 and 40 feet. Medium trees need a minimum space of 6 x 6 square feet of green space to maintain health. Yellowwood, hedge maple, and hornbeam are medium sized trees (**Figure 2**). Trees shall be planted a minimum of 40 feet apart.

Small trees are tree that grow less than 25 feet tall. Small trees need a minimum space of 4 x 4 square feet to grow to maturity. Redbud, serviceberry, and ivory silk lilac are examples of small trees (**Figure 3**). These trees are required to be planted in the public rights-of-way under or adjacent to utility lines per City Ordinance Chapter 99 Trees and Weeds. Trees are to be planted a minimum of 30 feet apart.

**Figure 1 – Large Trees (Taller than 40 Feet)**



**Kentucky Coffee**



**American Elm**



**Honey Locust**



**Sugar Maple**



**Swamp White Oak**



**Sweetgum**



**Black Tupelo**



**Bald Cypress**



**Hackberry**

**Figure 2 – Medium Trees (25 feet to 40 Feet Tall)**



**American Hornbeam**



**River Birch**



**Amur Corktree**



**Golden Rain Tree**



**Aristocrat Pear**



**Hardy Rubber Tree**



**Red Horsechestnut**



**Yellowwood**



**Pacific Sunset Maple**

**Figure 3 – Small Trees (No Taller than 25 Feet)**



**Serviceberry**



**Redbud**



**Ivory Silk Lilac**



**Thornless Hawthorn**



**Accolade Cherry**



**Paperbark Maple**



**Red Jade Crab  
Apple**



**Golden Raindrop  
Crab Apple**



**Amur Maple**

# Tree Selection

## Subdivision Street Trees

New construction sites for development remove the native top soil and set it aside. Heavy equipment is brought in to excavate the subsoil and bedrock. The subsoil is contoured and graded to meet the requirements of stormwater retention. Soils are severely compacted and have poor drainage after construction is completed. Trees planted in new subdivisions or business developments must tolerate high winds, drought, wet soil, and compaction. Soil samples are recommended to determine the nutrient level and pH. The recommended trees for subdivisions are listed below (Figure 4).

**American Elm or Lacebark Elm (Disease Resistant)** – Many varieties exist in both species. The Frontier Elm variety has green leaf in the spring and red leaf in the fall. 50-60 feet height and 40 feet spread at maturity. Hardy and fast growing.

**Bald Cypress** – Deciduous conifer that loses leaves in fall. Unique red bark that exfoliates in different shades. 60-70 feet height and 30 feet spread at maturity.

**Freeman Maples** (Cross between a red & silver maple) – Very nice tree. Leaves are green in spring and brilliant red/orange in fall. 50 feet height and 40 feet spread. Six varieties available.

**Ginkgo** – Green leaf in spring and brilliant yellow leaf in fall. 50-60 feet height and 35 feet spread at maturity. Slow growing.

**Linden Trees** – Many varieties available. Green leaf in spring and yellow leaf in fall. 40-50 feet in height and 30-35 feet spread. Susceptible to Japanese beetle (Sterling Silver is most resistant to Japanese Beetle).

**London Plane Tree** – Looks similar to wild sycamore tree but is grown for street tree planting. Defoliating bark twice a year. Green leaves in spring and yellow in fall. 75-80 feet height and 75-80 feet spread at maturity.

**River Birch** – Native birch to Ohio. Green leaves in spring and yellow leaves in fall. 40-50 feet in height and 30-35 feet spread. Resistant to insect pests.

**Sweetgum** – Three varieties available. Green leaf in spring and red leaf in fall. Seed pods drop in fall. 60 feet height and 25 feet spread. Gold Dust Variety is seedless.

**Village Green or Green Vase Zelcova** – Green leaf in spring and yellow leaf in fall. No fruit. 50 feet height and 40 feet spread at maturity. Excellent, nice tree.

**Figure 4 - Subdivision Street Tree Species**



**American Elm**



**Bald Cypress**



**Freeman Maple**



**Ginkgo**



**Sterling Silver Linden**



**London Plane**



**River Birch**



**Sweetgum**



**Zelcova**

# Tree Selection

## Memorial Trees



**Figure 5 – Memorial Tree at City Park**

The Memorial Tree Program encourages tree donations to honor, memorialize, or celebrate a special person, place, or event. Memorial Tree donations are accepted any time of the year and a tree will be planted during the appropriate planting season. In addition, donations of any amount may be earmarked for future tree projects **(Figure 5)**.

The Parks & Recreation Department is responsible for administering the Memorial Tree Program by calling (419)-354-6223. Bowling Green's Municipal Arborist coordinates the tree purchasing and planting for the Park & Recreation Department. Please refer to the Street Tree List for a list of trees that can be planted in **Appendix B**.

# Tree Selection

## Adopt-A-Tree Program



**Figure 6 - Adopt-A-Tree is the tree with green leaves located in the row of trees.**

Residents interested in planting one additional tree in the right-of-way in front of their homes, may participate in the Adopt-a-Tree Program **(Figure 6)**. The resident can plant one additional tree with a reduced price from a local nursery and a \$50 contribution from the City. Adopt-a-Tree permits are available from the City Administrative Services Building, 304 N. Church Street, on the second floor in Public Works Department or by calling (419)-354-6227. There are special circumstances where it may not be possible to plant a second tree on a lot due to the following: size of tree lawn, underground facilities, street lights, and visibility safety concerns. The Municipal Arborist will review each location on a case-by-case basis.

# Planting and Maintenance

## Proper Tree Planting

Tree planting is the most important component of long-term tree survival. Trees will begin to decline from lack of oxygen and respiration issues when planted below the grade. Trees planted too deep tend to have shallow roots and become prone to uprooting after major weather events such as thunderstorms (**Figure 7**).



**Figure 7 – Tree planted too deep in the soil.**

The above tree was planted 8 inches below the grade with the wire basket and burlap still intact. The roots growing above the burlap and wire basket to get oxygen and nutrients are visible in this picture. When planted correctly, the burlap and wire basket should be removed from the root ball. They do not decompose as commonly believed.

# Planting and Maintenance

## Proper Tree Planting

1. Dig the planting site 2-3 times the size of the root ball.
2. Center the tree in the planting site on solid subsoil.
3. Plant tree no lower than original grade of the root ball (**Figure 8**).
4. After the tree is positioned, cut and remove top 1/3 of the wire basket.
5. Remove the twine and roll down the burlap to the bottom of the hole.
6. Backfill one of half of the planting site with soil, tamped down, and fill the hole with water.
7. Once the water has drained, add the remaining backfill soil around the root ball.
8. Create a saucer shaped ring outside the root ball to facilitate future watering.
9. Place mulch 4-6 inches away from the trunk and out 3-4 feet from the trunk. This helps prevent lawn mower and weed trimmer damage to the trunk.

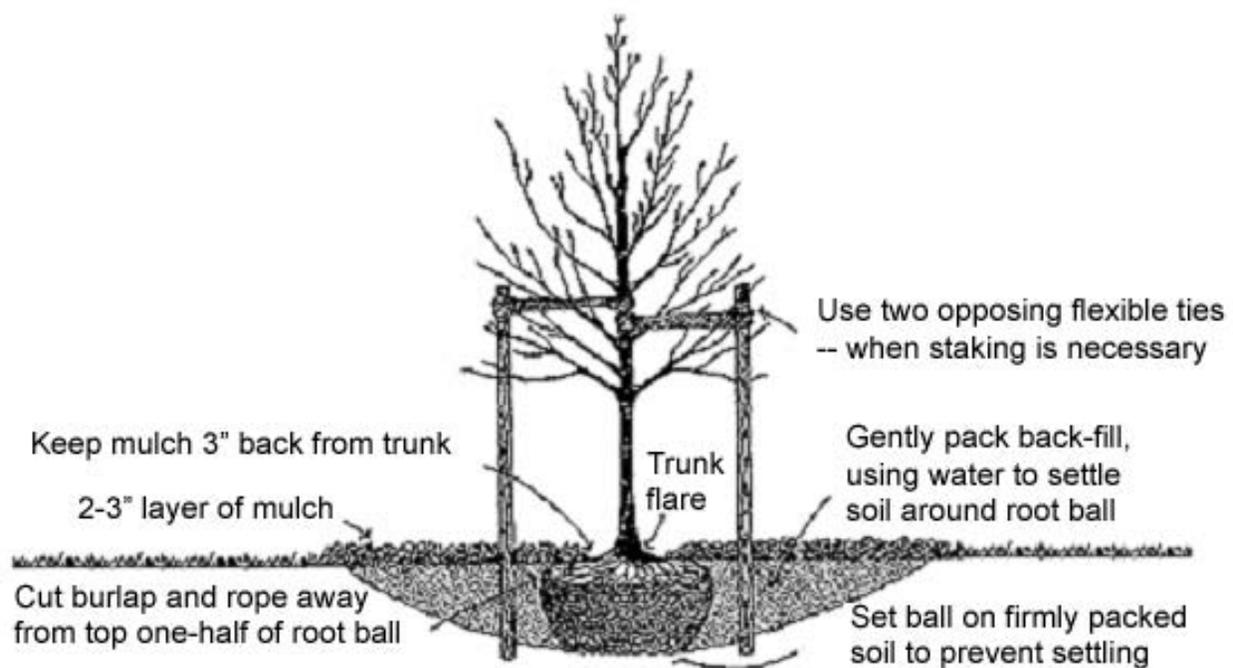


Figure 8 – Properly planted and staked tree.

# Planting and Maintenance

## Proper Tree Pruning

To develop a tree with a strong and desirable form, it is important to learn how to properly prune a tree. If trees are pruned properly when they are young, they will require less corrective pruning when they mature. Common reasons for pruning a tree are to remove dead branches, to remove crowded or rubbing branches, or to eliminate hazards **(Figure 10)**.

Before pruning a tree, keep these things in mind. If pruning is not done right, it can cause damage to the tree that will last for the life of the tree **(Figure 11)**. When a tree is wounded (caused by improper pruning) it must grow over, containing the wound inside the tree. Make sure that there is a purpose for making a cut on the tree because each cut can change the whole growth of the tree. Heavy pruning can be a health stress for the tree **(Figure 12)**.

Keeping this in mind, prune the tree by making proper cuts. Pruning cuts should be made just outside the branch collar **(Figure 9)**. The branch collar should not be damaged or removed because it contains trunk or parent branch tissue. If a permanent branch needs to be shortened, cut back to the lateral branch at least one-third the diameter of the branch. If cuts are between buds and branches, it may lead to sprout production, stem decay, and misdirected growth.

If a large limb is to be removed, its weight should be reduced first. This is done by making a cut from underneath about 12-18 inches away from the point of attachment **(Figure 9)**. Then make the second cut a couple of inches farther out on the limb from the top. This will cause the limb to break off. Next remove the 12-18 inch stub by cutting back to the branch collar. Start an undercut the remaining limb prior to cutting at a 45 degree angle to the branch collar to prevent tearing the bark.

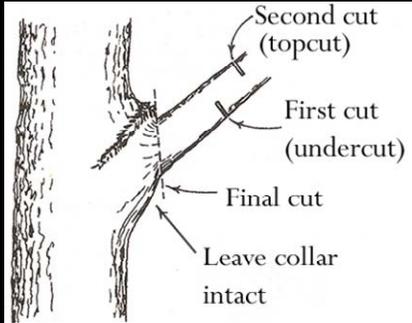
Along with proper pruning cuts, it is important to use the right pruning tools. For most small trees, most cuts can be made with a hand pruning shears. Please read the label when purchasing pruning shears. A one-half inch pruning shear should not be used for 1 inch limb. Cuts larger than one-half inch in diameter should be made with a pruning saw or loppers. All tools should be kept clean and sharp.

The City of Bowling Green minimum clearance for the city streets and rights-of-way is 14 feet. This allows for safety forces (Police and Fire) to provide high quality services without visibility issues. Bowling Green Local School buses need visibility to safely pick up and deliver the children to and from school each day. Our sanitation trucks, recycling trucks, and snow plow trucks are 14 feet tall and require the clearance to safely maneuver throughout the city to perform services.

# Planting and Maintenance

Figure 9 - Proper Tree Pruning: Removing Branches

## Make good pruning cuts



The diagram shows a tree trunk with a branch being removed. It labels three cuts: 'Second cut (topcut)' at the end of the branch, 'First cut (undercut)' on the underside of the branch about 12 inches from the trunk, and 'Final cut' flush with the trunk. It also notes to 'Leave collar intact'.

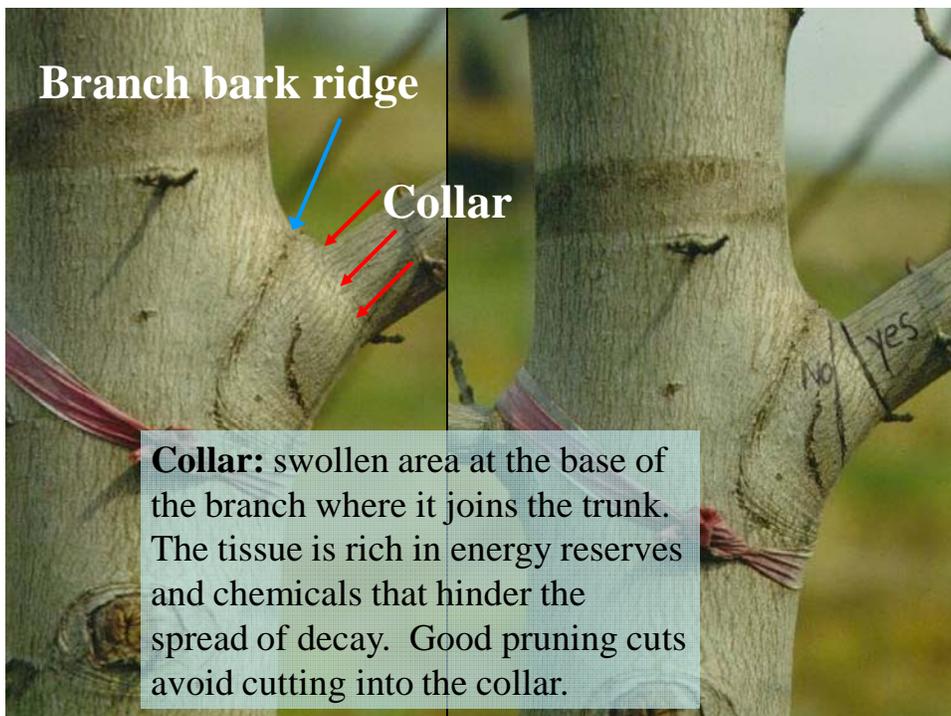
**Step 1**  
Make an undercut about 12 inches from the trunk.

**Step 2**  
Make a top cut farther out on the limb.

**Step 3**  
Remove the stub with final cut, being careful not to cut flush against the trunk. Leave the collar intact.



A close-up photograph of a tree trunk showing a clean, circular pruning cut. The cut surface is light-colored and shows the growth rings of the wood.



The image shows a close-up of a tree trunk with a branch. A blue arrow points to the 'Branch bark ridge' and red arrows point to the 'Collar'. The collar is a swollen area at the base of the branch where it joins the trunk. A text box explains that the collar tissue is rich in energy reserves and chemicals that hinder the spread of decay, and that good pruning cuts avoid cutting into the collar.

**Branch bark ridge**

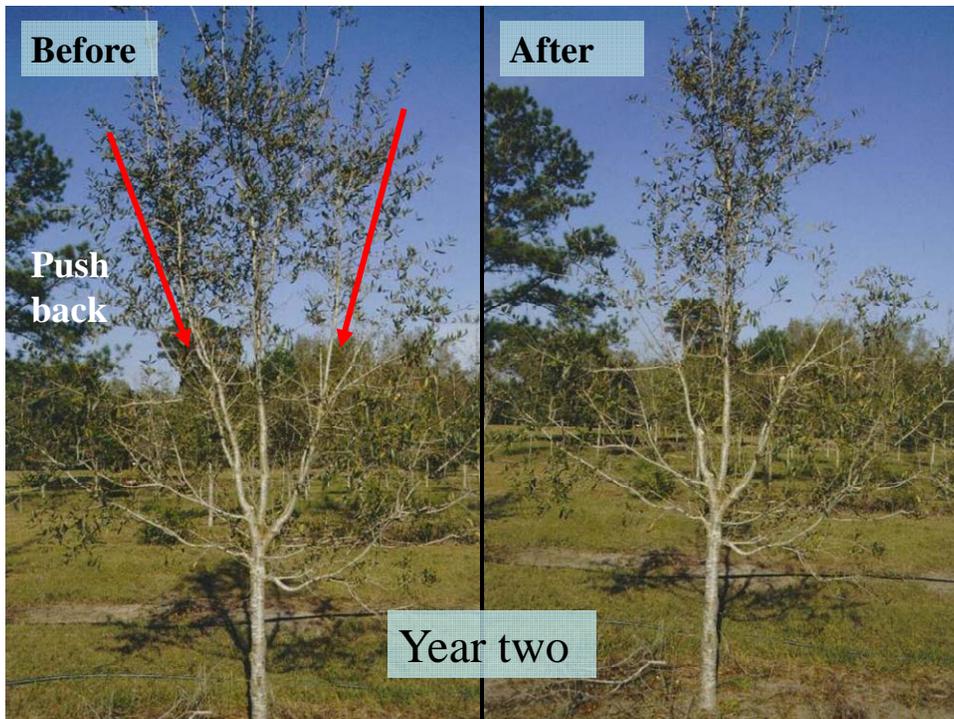
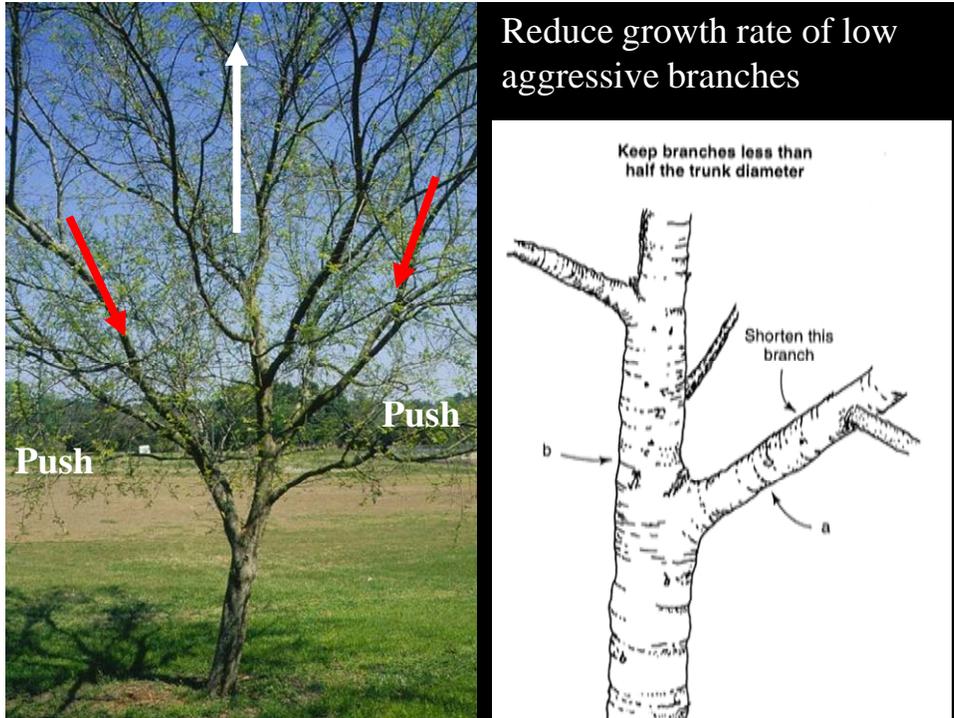
**Collar**

**Collar:** swollen area at the base of the branch where it joins the trunk. The tissue is rich in energy reserves and chemicals that hinder the spread of decay. Good pruning cuts avoid cutting into the collar.

*Pictures courtesy of Dr. Edward Gilman, University of Florida*

# Planting and Maintenance

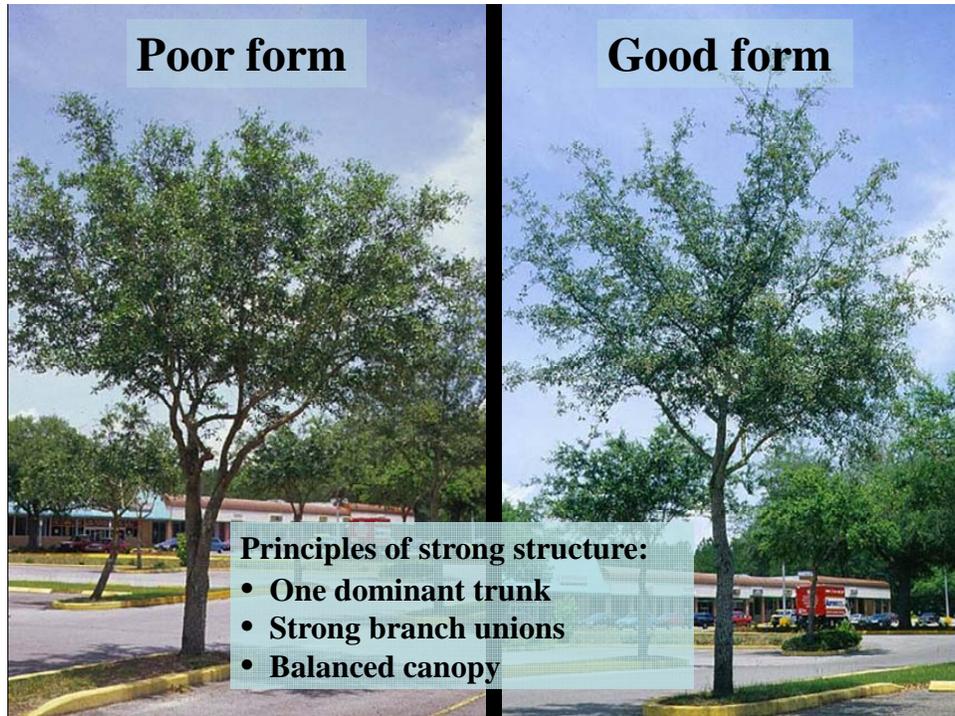
Figure 10 – Proper Tree Pruning: Removing Codominant Leaders



*Pictures courtesy of Dr. Edward Gilman, University of Florida*

# Planting and Maintenance

Figure 11 – Proper Tree Pruning: Removing Codominant Leaders



**Objective:** Reduce structural issues that cause tree failure

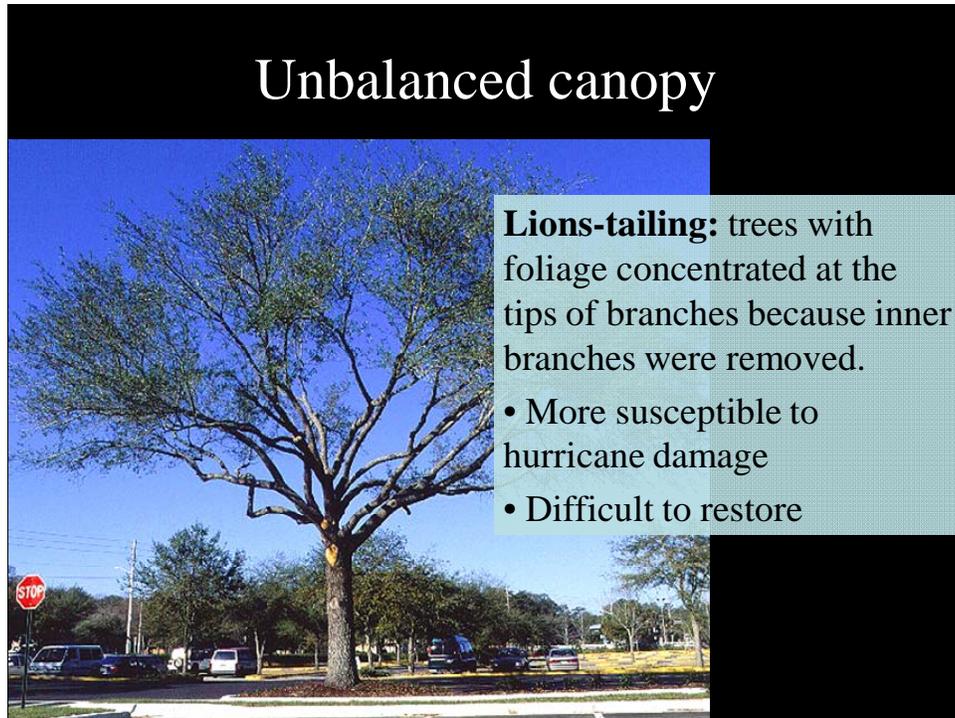
- **Codominant stems:** stems of equal size originating from the same point on the tree
- **Included bark:** bark pinched between two stems, indicating a weak union
- **Unbalanced canopy:** one side much heavier, or most weight at the tips of branches
- **Large low branches:**



*Pictures courtesy of Dr. Edward Gilman, University of Florida*

## Planting and Maintenance

Figure 12 –Improper Tree Pruning: Lions-Tailing



*Pictures courtesy of Dr. Edward Gilman, University of Florida*

# Planting and Maintenance

## Long-Term Tree Care – Hints & Tips

1. Planting
2. Watering
3. Mulching
4. Aeration
5. Fertilization & Micronutrients
6. Maintenance Pruning

### 1. Planting

- Trees must be planted at the root flare.
- Do not plant trees at the grade of the container or balled & burlap.
- Dig the planting hole 2-3 times the width of the root ball or container.
- Water the tree once 50% of the soil is in place.
- Complete the watering once the remaining 50% of the soil is finished.
- Berms the soil around the perimeter at 2-3 feet away from the root flares.

### 2. Watering

- To establish a good root system, slowly soak the root ball.
- Typically takes 15-20 minutes with hose.
- Tree Gator Bags hold 15 to 20 gallons and are filled every 7-10 days for two growing seasons (May to November) for city-owned trees. Others may use this as a guide for private trees.
- Unless it rains 1 inch or more per week, rain water is not enough for newly planted trees.

### 3. Mulching

- 2-3 inches of organic mulch is the best.
- Inorganic mulch can lead to problems. Rocks can heat up in the summer sun.
- Pull the mulch 6 inches away from the trunk on small trees and 12 inches from large trees.
- Placing 6 inches of top soil and landscape stones around the tree causes CO<sub>2</sub> builds up and tree can't complete respiration, oxygen is depleted and the tree starts to decline.
- Volcano Mulching is defined as piling mulch 6-12 inches or more above the root flare against the bark.
- Oxygen is depleted with volcano mulch.
- Transpiration and respiration is negatively impacted by volcano mulch.
- Trees start a slow decline with volcano mulch.

# Planting and Maintenance

## 4. Aeration

- Soil aeration is required once every five years if a tree is planted in clay soils.
- Compacted soils reduced the feeder root growth and cause the tree to decline.
- Normal oxygen content of soil is 12%.
- Air Spade or Air Knife make up two of the professional tools on the market.
- The star pattern is best for the most trees.
- The aerated trench should be 6 inches wide and 12 to 18 inches deep out to the height of the trees.
- Home Owners can use ½ inch power drill with a 1 inch diameter drill bit to make holes.
- Large tree saturates the ground with feeder roots and deplete the nutrients.
- Roots are easily compacted with feet of humans.

## 5. Fertilizer & Micronutrients

- **Trees planted properly in the correct site do not need fertilization and micronutrients.**
- Most urban trees are planted in tough sites.
- Clay subsoil is the tree's final resting place in most subdivisions in Northwest Ohio.
- Sandy soils leach nutrients and water fast which requires more frequent watering program.
- Trees planted in these sites may need some help.
- Plant the right tree in the place with natives will have the best outcome.

## 6. Maintenance Pruning

- Prune only broken, damage or diseased branches when planting new trees.
- Prune a minimum 2-3 years after planting.
- Prune every 3-5 years on cycle until the tree is 10 feet clear above ground.
- Branches should be spaced every 6-12 inches in tree are ideal.
- Branch angles with the range of 30% to 60% are good.
- Remove no more than 10-15% on small trees.
- Remove no more than 25% on large trees.
- All pruning stresses a tree.
- Pear trees are prone to splitting in high winds.
- Large trees should be addressed by a professional trained in arboriculture on large trees.

# Planting and Maintenance

## Proactive Maintenance

Reactive urban forestry programs are the result of focusing all the resources (money, labor, equipment) on new tree planting with little or no money for long-term maintenance. This leads to expending major resources especially overtime dollars to remove public trees that fail during severe weather events due to lack of care. **Proactive maintenance of trees allow the community to maximize the benefits of the trees growing to maturity.**

Tree selection is driven by the soil type, nutrient levels, and drainage. Most new construction sites are in subsoil with high clay content. High clay content soils have poor drainage, high pH, and nutrients such phosphorus; iron, manganese, and zinc in the chemical properties. Acid loving trees do not do well in these sites. **If the right tree is selected in the right place, this reduces long-term care and maintenance costs.**

A newly planted 2-inch diameter balled and burlaped tree require 15-20 gallons of water per week through the growing season for the first two years after planting (May 15 to November 15) unless the newly planted tree receives about 1 inch of study rain per week. Sometimes the new tree is only watered for a month and that is inadequate. **The number one cause of new tree planting mortality is lack of water.**

Soil aeration is a relatively new tool for homeowners and businesses. **If a new tree is planted in clay soils, it should be aerated once every five years.** Tree roots are in the upper 18 inches and the active feeder roots that take water and nutrients are in the upper 6 inches. Soil compaction of clay soils reduces oxygen content and feeder roots decline and die. The new tree falls under stress and eventually fails.

**Proper tree selection and proper tree planting eliminate the need for fertilizer and micronutrients.** Most urban trees are planted in tough sites. Native or naturalized trees to the site are the best choice for success for tree growth to maturity.

**Tree pruning is just as important to long-term tree health.** Permanent branches should be placed every 12 to 18 inches up the tree. All branches on newly planted trees are temporary until a minimum of 10 feet of clearance is obtained. A new tree should be pruned 2-3 years after planting and every 3-5 years after until the tree is 25 years old. After that time, a tree can be pruned every 5-10 years.

# Landscape Regulations

## Public Rights-of-way

Bowling Green residents take much deserved pride in the beauty and diversity of trees, shrubs, ground covers, and flowers through their parks, along city's rights-of-way, and in the tree lawns and boulevards within residential neighborhoods. This natural beauty has not been happenstance. For 29 consecutive years, Bowling Green has been designated as a "Tree City USA" community.

The innovative and resourceful efforts by the City by planting hundreds of new trees, prudent pruning, and removal of hazard and diseased trees and the Parks and Recreation Department the development of Simpson Park, working in close cooperation with dozens of citizen volunteers, are making Bowling Green a more beautiful and interesting place to live.

These similar activities have earned the City 16 consecutive "Growth Awards" from the ODNR Division of Forestry and National Arbor Day Foundation. From the planting of improved replacement trees along Main Street to the rich diversity of flowers and trees in the "triangle" at Wintergarden and Bowling Green Road West, city residents have witnessed amazing expansion of natural beauty. Future generations will enjoy projects such as the renovation and beautification of Raney Playground on Sand Ridge Road and Bellard Park on Kenwood Boulevard.

Encouraged, perhaps, by the beautification programs throughout our community, it is also of note that the exuberance of some residents has led them to plant trees, shrubs, flowers, and grasses in some rights-of-way, easements, and other public rights-of-way. While these private efforts are understandable, and arguably quite beautiful, virtually all communities including Bowling Green, have ordinances in place that control the use of public places. These ordinances are designed to secure public safety and to assure aesthetic and practical uniformity.

A right-of-way is any strip of land---whether surface, overhead, or underground---that is granted by deed, plat, or easement for public use. Roadways, sidewalks, ditches, electric power, telephone and cable lines, gas, water and sewer lines are all examples of uses allowed in the rights-of-way by the city ordinances. Rights-of-way are public places that include any property owned or held by the city, or any area which the city has a right or easement to maintain.

A tree lawn, the unpaved portion of street right-of-way, is normally the green space between the sidewalk and curb or edge of street pavement. Boulevard islands, typically located at entrances to and exits from residential areas, are the portions of

# Landscape Regulations

## Continued

divided streets that are unpaved, public property owned or held by the city. Similarly, cul-de-sac islands are also owned or held by the city. Public utilities, both overhead and underground, use public places as a practical matter and the city has the right to restrict, manage and control planting, as well as, the right to restrict the use of possible substances, including stone, bricks, and similar items that obstruct access to air and water to the roots of trees located in any of these areas.

The ordinance relevant to planting in public places addresses safety issues. Because traffic visibility is a major concern at public intersections, there are specific restrictions on plantings within what is referred to as the “visibility triangle.” The lines of this triangle extend 25 feet from the corner lot in both directions, and then diagonally between the points. No plantings of any kind – flowers, grasses, or trees – may be planted within this triangle. What does all this mean to residents who might wish to dig up some of their tree lawns or other public places to plant flowers, grasses, or trees? Please do not do it!

## Public Cul-de-sacs and Boulevard Islands

Plans and species specifications for planting (anything other than standard lawn grass) in cul-de-sac and boulevard islands must be submitted by developers and/or residents with the appropriate application form(s) available from the City Arborist. Information specified with the application forms for both cul-de-sacs and boulevards include restrictions on what may be planted as well as the maintenance responsibilities of adjacent property owners. For cul-de-sacs, there are additional requirements for appropriate clearance around the surveyor’s concrete monument near the island center. No alterations may be made to the approved planting plans without the written consent of the City Arborist.

# Landscape Regulations

## Growing and Maintaining New Lawn Areas

1st Day: Business or homeowner must provide adequate protection of the newly seeded area.

2<sup>nd</sup> Day: Start watering the seeded areas everyday so that the hydro-seed will remain moist and damp. The homeowner should irrigate the seeded area for a minimum of 10 -15 minutes per day for the growing season in the mornings. DO NOT OVER WATER OR ALLOW WATER TO STAND.

Within 10-15 days: Germination will appear, providing the soil remains moist and has a constant temperature of at least 60-65 degrees or warmer. The starter fertilizer that has been applied at the time of hydro-seeding will soon be exhausted. FERTILIZE WITH NEW STARTER FERTILIZER AT THE RECOMMENDED AMOUNT ON THE LABEL. CAUTION: AVOID LATE EVENING WATERING OR NIGHT WATERING DURING HOT AND HUMID WEATHER.

Within 2-3 Weeks: If there has been a good germination period, there may be 1-2 inches of growth. DO NOT APPLY BROADLEAF WEED HERBICIDE TO THE SEED AREA UNTIL THE SEEDED AREAS HAVE BEEN MOWED 3 TO 4 TIMES OR IF THE GRASS LOOKS STRESSED.

Lawn Mowing: Set mower at 2 ½ - 3 ½ inches high. Cut every 1 -2 inches of new growth. MOW AS NEEDED. DO NOT MOW TOO SHORT DURING HOT AND DRY WEATHER.

3<sup>rd</sup>-4<sup>th</sup> Week: Continue watering every day, but for longer periods at a time and less often. This allows root growth to penetrate deeper in the soil.

4<sup>th</sup>-5<sup>th</sup> Week: Continue watering every day. Some areas may appear sparse or thin, it will take a full growing season for the lawn to reach full maturity.

6<sup>th</sup>-7<sup>th</sup> Week: Continue watering at least every other day. If the lawn is stressed and does not have good density or looks sick and is not filling in well, it may be necessary to fertilize immediately at the recommended rates on the label.

8<sup>th</sup> Week and Future: Continue to water as needed and maintain a good weed & feed program. It is better to fertilize the lawn before it shows signs of stress.

# Landscape Regulations

## Growing and Maintaining Existing Lawn Areas

First, let's consider which grasses are growing in the lawn. Of the four cool season grasses grown in Ohio, tall fescue and the fine fescues are the most drought tolerant and will remain green through most summers without supplemental irrigation, while Kentucky bluegrass and perennial ryegrass will turn brown at some point and go dormant. These lawns may need supplemental, light irrigation to ensure they survive. In most summers in Ohio, lawns can quickly decline in quality in July and August with the arrival of hot, dry weather. The homeowner or business should make a decision by early summer whether to will allow the lawn to go dormant or irrigate to keep it green. Note that the lawn should not be taken in and out of dormancy.

For most people, irrigating the entire lawn is not practical unless there is an in-ground irrigation system. It may be more practical to water priority areas such as the front and side yards. Even with an in-ground system, the volume of water necessary to properly irrigate large areas can be cost prohibitive and may be a burden on water resources.

If the choice is made to keep the lawn green all summer, approximately one inch of water will be needed per week to maintain lawn quality during rain-free periods. Irrigate every five days with one-half to three-quarters inch of water. Or, if runoff is a problem, irrigate until runoff begins, delay irrigation for one to two hours to permit infiltration, and then resume watering until the desired amount of water has been applied. Use straight-sided cans or rain gauges placed under the sprinkler pattern to monitor the amount and distribution of water being applied.

If the choice is made to let the grass go dormant, a light irrigation of one-half inch of water every three to four weeks is recommended to keep the roots and crowns alive to help ensure grass survival in hot, dry summers. However, this amount of water will not re-green the lawn. Early morning, before 9 a.m., is the most efficient time for irrigating. The lawn is already wet from dew, humidity is high, calm conditions usually exist and temperatures are cooler, all of which favor maximum infiltration and utilization of water **(Figure 13)**.



**Figure 13 – New Lawn Installation at Raney Playground**

# Landscape Regulations

## Construction Protection for Trees

Trees can be devastated by construction damage if no measures have been taken to protect them. The visible injuries, such as broken branches and wounds to the tree trunk, are only the beginning. It is the damage to the roots system that often results in loss of the tree.

As most cities and suburbs expand, wooded areas are being developed into commercial and residential sites. Buildings are erected in the midst of trees to take advantage of the aesthetic value of wooded lots. However, if proper steps are not taken to ensure their survival, many of the trees will be lost in subsequent years. Understanding how to minimize construction injury is based on knowledge of tree physiology and components needed for tree health, as well as understanding construction practices.

The most serious damage to trees caused by construction is underground. The root system of a tree growing in a wooded area may spread a distance greater than the height of the tree. Fine, absorbing roots are located in the upper 6 to 12 inches of soil. These roots are easily damaged or killed by construction equipment. Trees may show slow decline symptoms within a few months of construction activity or the symptoms may not appear for a few years. Symptoms may include small or yellow leaves, premature fall color, extensive water sprout development on the trunk and main limbs, dead twigs, and eventually, major branches die.

Soil compaction can be devastating to trees. Installation of sidewalks, streets, or water/sewer lines requires heavy equipment to reduce or increase grade. Heavy equipment wheels compact the soil particles which results in reduced pore space. Oxygen availability is reduced to the roots and cause accumulation of carbon dioxide and other gases. Root growth is diminished and the ability to absorb water and nutrients decrease. Soil compaction reduces water infiltration and impairs drainage. The ability of roots to grow and expand into compacted soils is reduced. The tree begins a slow decline toward death.

If trees are to be preserved on construction sites, the arborist must be involved in the planning and development process. An objective of development should be to satisfy all requirements of construction with minimal impact to the trees that remain on site. Only healthy, structurally sound trees should be preserved. Also, one needs to take into account the trees' tolerance for construction activity. The largest, most mature trees are not the best candidates. Younger trees can usually survive, recover and better adapt to the stress of construction.

The single most important action that can be taken at the start of construction is to set up construction fences around all of the trees that are to remain (**Figure 14**). The fences should be placed as far out from the trunk as possible. Allow at least 1.5 feet of space from the trunk for each inch diameter of the trunk. The intent is not merely to protect the above ground portions of the tree, but also the root system. No digging, trenching, compaction, or other soil disturbance should be allowed in the fenced area. Careful planning and communicating with developers and contractors is the key to preserving trees from construction damage.



**Figure 14 - Tree Construction Protection at City Park**

## Conclusion

Bowling Green's street trees are a valuable municipal resource and a critical component of the City's green infrastructure. Trees are an important part of Bowling Green's identity and history. This is evident in the older sections of town where large oaks still stand from the days of the Great Black Swamp. Bowling Green has been proactive in planting trees in the public right-of-ways and parks, manages 8,200 street and park trees and city-owned green spaces **(Figure 15)**. The City appreciates the planning and cooperation of the developers, businesses and homeowners managing trees.



Figure 15 - Rotary Nature Center

# Appendix A

## City Ordinance

### CHAPTER 99: TREES; WEEDS

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#### Section

#### *Trees*

- 99.01** Definitions
- 99.02** Arborist to control trees
- 99.03** Permit required
- 99.04** Removal of trees on public property
- 99.05** Abuse or mutilation of public trees
- 99.06** Deleterious substances near trees
- 99.07** Stone or concrete adjacent to tree trunk
- 99.08** Preservation of trees on public property
- 99.09** Care during building operation
- 99.10** Moving of trees; deposit or bond
- 99.11** Trimming trees on private property
- 99.12** Certain trees prohibited
- 99.13** Planting of trees on public property

**99.14** Planting and maintenance in cul-de-sac and boulevard islands

**99.15** Trees in new subdivisions

**99.16** Unlawful interference

*Weeds*

**99.20** Noxious weeds; duty to cut

**99.99** Penalty

*Cross-reference:*

*For classification of civil offenses and related proceedings, see  
**Chapter 38***

## **TREES**

### **§ 99.01 DEFINITIONS.**

For the purposes of §§ **99.01** through **99.16**, the following words and phrases shall have the following meanings ascribed to them respectively.

**ARBORICULTURE.** The care of trees.

**ARBORIST.** The City of Bowling Green Municipal Arborist.

**BOULEVARD ISLAND.** The portion of divided streets that is unpaved, public property owned or held by the city and over which the city has a right to restrict, manage, and control plantings, typically located at entrances and exits from residential areas. Occasionally these boulevard islands run the entire length of a street.

**CUL-DE-SAC ISLAND.** The unpaved portion of cul- de-sacs, public property owned or held by the city and over which the city has a right to restrict, manage, and control plantings.

**CONIFER.** Any cone-bearing tree or shrub that retains its green living foliage the entire year.

**PUBLIC PLACE.** Any public street, public park, any property owned or held by the city, or any area over which the city has a right or easement to maintain trees.

**TREELAWN.** The unpaved portion of street right-of-way; normally the green space between the sidewalk and the curb or edge of street pavement.

**TREE PRESERVATION.** Includes the treating, spraying, pruning, maintaining, and any other care or work intended for the strengthening of trees and removal and prevention of tree pests, blights, and diseases of any kind.

**TREE TOPPING.** The severe cutting back of limbs to stubs of three inches or more in diameter within the tree's crown, to such a degree as to remove the normal canopy and disfigure the tree.

('65 Code, § 945.01) (Ord. 7241, passed 5-3-04)

***Cross-reference:***

*Tree commission, see § 30.108*

**§ 99.02 ARBORIST TO CONTROL TREES.**

(A) The Arborist is given full jurisdiction, authority, control, supervision, and direction of all trees which now or which may hereafter exist upon any public place in the city; and over all trees which exist upon any private property when, in the Arborist's opinion, such trees constitute a menace to public property, public safety, or public welfare of the city.

(B) The Arborist is also given full jurisdiction, authority, and control in connection with the issuing of permits hereinafter provided for. In the exercise of any of the powers herein granted, the Arborist shall have the authority to delegate all or such part of his/her power and duties with respect to supervision and control of trees to the Arborist's subordinates and assistants in the employ of the city as the Arborist may from time to time determine.

('65 Code, § 945.02) (Ord. 7241, passed 5-3-04)

**§ 99.03 PERMIT REQUIRED.**

No person shall plant, prune, remove, cut, climb, or injure any tree existing on any public place in the city, or authorize or procure any persons to do so, or remove or tamper with any device placed for the protection of any such tree, or attach any rope, wire, chain, sign or other device whatever either to such tree or to any device placed for the protection of such tree, or authorize or cause the same to be done, without having first obtained written permission from the Arborist to do so.

('65 Code, § 945.03) (Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.04 REMOVAL OF TREES ON PUBLIC PROPERTY.**

(A) No person shall prune, brace, cable, spray, or otherwise perform work on a tree in a treelawn or other public place without the property owner first obtaining a permit from the Arborist. The person obtaining the permit shall abide by the standards as set forth in this chapter.

(B) The Arborist shall keep all trees standing upon any public place in the city trimmed so that the branches of such trees projecting over any public sidewalk, private driveway, or into any public street beyond the curb line shall not conflict with the public welfare.

(C) The Arborist shall have the right and duty to trim any tree existing on any public place in the city so as to insure the public safety or to preserve the function or beauty of such public place. The Arborist shall further have the right to remove any such tree or any part thereof which is in an unsafe condition or which, by reason of its location or nature, is injurious or detrimental to other public improvements in the city, or is infected with any injury, fungus, insect, or other pest or disease which cannot otherwise be controlled.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.05 ABUSE OR MUTILATION OF PUBLIC TREES.**

(A) Unless specifically authorized by the Arborist or his/her designee, no person shall intentionally top, damage, cut, carve, transplant, or remove any tree or shrub located on public property; attach any rope, wire, nails, advertising posters, or other contrivance to any tree or shrub located on public property; allow any gaseous liquid or solid substance which is harmful to such trees or shrubs to come in contact with them; or set fire or permit fire to burn when such fire or the heat thereof will injure any portion of any tree or shrub located on public property.

(B) No person shall excavate any ditches, tunnels, trenches, alley or driveway within a radius of ten feet from any public tree or shrub without first reading obtaining approval from the Arborist and an excavation permit from the Public Works Director or his/her designee.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.06 DELETERIOUS SUBSTANCES NEAR TREES.**

No person shall permit any natural or artificial gas, salt, brine, water, oil, liquid dye or any other substances deleterious to trees to come in contact with the soil surrounding the roots of any

tree upon any public place in the city in such a manner as to kill, injure, deface, destroy, or affect the growth of such trees.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.07 STONE OR CONCRETE ADJACENT TO TREE TRUNK.**

No person shall place or maintain upon the ground in any public place any stone, concrete, brick, or other impervious material or substance in such a manner as may obstruct the free access of air and water to the roots of any tree upon any public place without first having obtained written permission from the Arborist. Unless otherwise provided for, there shall be maintained about the base of the trunk of each such tree at least nine square feet of open ground for a tree three inches in diameter, and for every two inches of increase in such diameter, there shall be an increase of at least one square foot of open ground.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.08 PRESERVATION OF TREES ON PUBLIC PROPERTY.**

(A) Whenever it is necessary to remove a tree(s) or shrub(s) from a treelawn or other public place, as defined, in connection with the construction of a sidewalk, or the paving or widening of a portion of a street, alley, or highway used for vehicular traffic, or any other reason, the city shall remove and replant such trees or shrubs, or replace them if public property is available.

(B) No person shall remove a tree(s) or shrub(s) from a treelawn or other public place, as defined, for the purpose of construction or for any other reason without first requesting and obtaining written approval from the Arborist or his/her designee and without replacing the removed tree(s) or shrub(s). Such replacement shall meet the standards of number, size, species, and placement as provided for in an approval issued by the Arborist or designee. The person shall bear the cost of the removal and replacement of all trees or shrubs removed. Failure to plant replacements according to city standards shall result in replacement performed by the city, its employees, or agents; and the city shall bill the person responsible for replacement at the actual cost of the work.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.09 CARE DURING BUILDING OPERATION.**

No person in charge of or responsible for the erection, alteration, or removal of any building or structure in the city shall permit any tree upon any public place in the vicinity of such operation to stand without a good and sufficient guard or protection as shall prevent injury,

damage, or defacement to such tree arising out of, in connection with, or by reason of such operation. The quality of the guard or protection shall be determined by the Arborist.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.10 MOVING OF TREES; DEPOSIT OR BOND.**

All moving of trees upon any public place in the city made necessary by the erection, alteration, removal or moving of a building or structure or any other private enterprise shall be done under the supervision of and with the written permission of the Arborist, and at the expense of the applicant or person seeking the removal of such tree. This applicant, as one of the conditions to obtaining such permission, shall deposit with the city such sum in cash as the Municipal Administrator may determine and specify to cover all of the cost of moving and replacing such tree, if the conditions of such permission require the replacement thereof. However, in lieu of such cash deposit the Municipal Administrator may in his/her discretion accept a good and sufficient bond in like amount conditioned upon the payment of all the cost of such moving and replacing.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.11 TRIMMING TREES ON PRIVATE PROPERTY.**

All trees standing upon private property in the city having branches projecting into public highways or public places shall, under the supervision of the Arborist, be kept trimmed by the owner or occupant of such private property to such an extent that the lowest branches of such trees shall not come within nine feet of the ground where they overhang any public sidewalk, public place, or public highway.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.12 CERTAIN TREES PROHIBITED.**

No person shall plant or permit to be planted any of the following trees upon a public place or in any tree lawn in the city, and the Arborist is authorized to cause such trees that are now so located to be removed at his/her discretion:

Acer saccharinum (Silver Maple)

Acer negundo (Boxelder)

Aesculus species (Horse Chestnut, Buckeye)

Ailanthus altissima (Tree of Heaven)

Betula species (Birch species except River birch Betulanigra)

Catalpa species (All Catalpa)

Elaeagnus angustifolia (Russian Olive)

Fruit Tree cultivars bred for fruit production

Ginkgo biloba (Female Ginkgo)

Juglans nigra (Black Walnut)

Morus species (All Mulberry)

Platanus occidentalis (Sycamore)

Populus species (All poplar/cottonwood)

Pyrus calleryana "Bradford" (Bradford Pear)

Robinia pseudoacacia (Black Locust)

Salix species (All Willow)

Sorbus aucuparia (European Mountain Ash)

Ulmus species susceptible to Dutch Elm disease

Ulmus pumila (Siberian Elm)

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

### **§ 99.13 PLANTING OF TREES ON PUBLIC PROPERTY.**

(A) No person shall plant any tree in a treelawn or other public place without first obtaining the prior approval of the Arborist. The city shall require the property owner to obtain a permit from the Arborist. The person obtaining the permit shall abide by the standards as set forth in this chapter.

(B) Whenever any tree or shrub shall be planted or set out in conflict with the provisions of this chapter, the

City Arborist may cause removal of the same without obligating the city to replace the illegally planted tree(s).

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.14 PLANTING AND MAINTENANCE IN CUL- DE-SAC AND BOULEVARD ISLANDS.**

Plans and species specifications for planting (anything other than standard lawn grass) in cul-de-sac and boulevard islands must be submitted by developers and/or residents with the appropriate application form(s) available from the Arborist. Information specified with the application forms for both cul-de-sacs and boulevards includes restrictions on what may be planted, as well as the maintenance responsibilities of adjacent property owners. For cul-de-sacs, there is an additional requirement for appropriate clearance around the surveyor's concrete monument near the island center. No alterations may be made to the approved planting plans without the written consent of the Arborist.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

#### **§ 99.15 TREES IN NEW SUBDIVISIONS.**

The City Arborist shall approve the tree plan for any newly developed city treelawns.

(A) *Tree spacing.* The spacing of public trees will be in accordance with the three species size classes referred to in the Arborist's list of street trees and no trees may be planted closer together than the following (except in special plantings designed or approved by the Arborist):

- (1) Small trees: 30 feet
- (2) Medium trees: 40 feet
- (3) Large trees: 50 feet

(B) *Distance from curb and sidewalk.* The distance public trees may be planted from curbs or curblines and sidewalks will be in accordance with the three species size classes in the Arborist's list of street trees and no trees may be planted closer to the curb or sidewalk than the following (except in special plantings designed or approved by the Arborist):

- (1) Small trees: two feet (minimum of a four-foot wide treelawn)
- (2) Medium trees: three feet (minimum of a six-foot wide treelawn)
- (3) Large trees: four feet (minimum of an eight-foot wide treelawn)

(C) *Distance from the street corners and fire hydrants.* No public tree shall be planted closer than 25 feet from any corner lot, measured in accordance with 150.05 of the code. No public tree shall be planted closer than ten feet to any fire hydrant.

(D) *Overhead electric utilities.* No public trees other than those species referred to as small trees in the Arborist's list of street trees may be planted under or within 25 lateral feet of any overhead primary electric wire.

(Ord. 7241, passed 5-3-04; Am. Ord. 7293, passed 9-7-04) Penalty, see **§ 99.99**

### **§ 99.16 UNLAWFUL INTERFERENCE.**

No person shall interfere with the Arborist or his/her subordinates or assistants while engaged in or about the carrying out of the provisions of this chapter or the doing of any of the work ordered by the Arborist to be done hereunder.

(Ord. 7241, passed 5-3-04) Penalty, see **§ 99.99**

## **WEEDS**

### **§ 99.20 NOXIOUS WEEDS; DUTY TO CUT.**

(A) It is hereby determined that noxious weeds, as defined by the Ohio Director of Agriculture, growing within the city, that are about to spread or mature seeds, and that grass eight inches or more in height growing on lands within the city, constitutes a health hazard and/or nuisance to the occupants of neighboring properties. The Municipal Administrator, or his or her designee, shall cause a written notice to be posted upon such property, notifying all persons that such health hazard and/or nuisance must be abated within five days after the posting of such notice.

(B) If the owner, lessee, agent or tenant, or other person having charge of the lands mentioned in division (A) fails to comply with the notice required by such section, the Municipal Administrator, or his or her designee, shall cause such health hazard and/or nuisance to be abated, and may employ the necessary labor and equipment to perform the task. All expenses incurred shall be paid from money in the city general fund not otherwise appropriated. Use of city labor and equipment shall be charged at the rate of \$130 per hour, or portion thereof, unless otherwise determined by resolution of City Council. Damage to city equipment caused by the abatement will also be charged.

(C) The Finance Director shall make a written return to the County Auditor of actions taken under divisions (A) and (B), with a statement of the charges for the services necessary, the amount paid for the performing of such labor, and a proper description of the premises. Such amounts, when allowed, shall be

entered upon the tax duplicate, shall be a lien upon such lands from the date of entry, and shall be collected as other taxes and returned to the city to the general fund.

## **§ 99.99 PENALTY.**

Whoever violates any provision of this chapter is guilty of a minor misdemeanor. Each day's continued violation shall be a separate offense

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**Honorable Mayor John B. Quinn (Left) and Drew Todd (Right), State Urban Forestry Coordinator, ODNR Division of Forestry presenting a Tree City USA & Growth Award in Ada, Ohio.**

# Trees Best Suited To Clay Soil

Apples and Crabapples	Norway and Silver Maple	Common Honeylocust
Aspen and Cottonwood	River Birch	Kentucky Coffeetree
White, Black, Green Ash	Elms	European Larch and Tamarack
Ohio Buckeye and Horsechestnut	Hawthorn	Lindens
Bur Oak and Eastern Pin Oak	Swamp White Oak	Willow

## Other Trees That Tolerate Clay

Balsam and White (Concolor) Fir	Freemani, Red and Amur Maples	Norway and Black Hills Spruce
Austrian, White and Scotch Pines	Japanese Tree Lilac	Gingko Black Walnut

## Shrubs Best Suited to Clay Soil

Alpine Currant	Honeysuckle	Siberian Peashrub
Arborvitae	Lilac	Snowberry
Chokeberry	Ninebark	Arrowwood and Nannyberry Viburnum
Redtwig Dogwood	Potentilla	European and Highbush Cranberry Viburnum
Forsythia	Russian Olive	Willow

## Other Shrubs That Tolerate Clay

Barberry	Winged Euonymus	Serviceberry
Diervilla	Junipers	Sumac
Pagoda Dogwood		Winterberry

## Planting and Care Tips for Clay Soil

A lot of research has been done on the best methods for planting in clay soils. Before you dig a hole, examine the plant. Carefully remove enough soil from the top of the roots to find the root flare on the trunk of the plant. This is the spot where roots start growing out away from the trunk. Sometimes it will be an inch or two (or even more) below the surface of the soil in a container or ball. It is very important that the root flare be located. It should be at or just above the surrounding soil level when planted. (Large B&B plants should be planted 2-3 inches above the adjacent soil level, smaller container plants should be planted 1-2 inches above the adjacent soil level.) Measure from the root flare to the bottom of the root mass and dig the hole just that deep. Do not disturb the soil any deeper or the plant may settle lower after it is planted. The hole should be at least twice as wide as the root ball and the hole should be shaped like a large bowl, gradually getting shallow towards the edges. Avoid straight sides on the hole and be sure to rough up the surfaces. Another important recommendation is to avoid drastic changes in soil type. It is best to fill back this hole with the same soil you removed. Soil amendments can be mixed into the top 6 inches surrounding the planting hole.

## Appendix B: Approved Street Tree List – Small Trees (X < 25 Feet Tall)

### City of Bowling Green Urban Forestry Division

#### Small Deciduous Street Trees (Less Than 20 Feet)

Shape: O - Oval, R - Round, U - Upright, W - Weeping, P - Pyramidal  
 Growth Rate: S - Slow, M - Medium, F - Fast  
 Flower: W - White, Y - Yellow, R - Red, P - Pink  
 Tolerance: L - Low, M - Medium, H - High  
 Insects & Disease Resistance: L - Low, M - Medium, H - High

Common Name/Cultivar	Botanical Name	Height (ft.)		Flower	Growth Rate	Urban Tolerance	Salt Tolerance	Drought Tolerance	Insect Resistance	Disease Resistance
		Spread (ft.)	Shape (ft.)							
Globe Norway Maple	Acer plat. 'Globosum'	15	18 R	S	S	H	H	H	H	H
Serviceberry - 'Autumn Brilliance', 'Cole's Select', 'Princess Diana'	Amelanchier x grandiflora	20	15 U	W	M	M	M	M	H	H
Adirondack Crabapple	Malus 'Adirondack'	18	10 U	W	M	H	M	M	H	H
Doubleblooms Crabapple	Malus 'Doubleblooms'	18	16 U	W	S	H	M	M	H	H
Jackii Crabapple	Malus 'Jackii'	20	20 R	W	M	H	M	M	H	H
Prairifire Crabapple	Malus 'Prairifire'	20	20 R	R	M	H	M	M	H	H
Purple Prince Crabapple	Malus 'Purple Prince'	20	20 R	R	M	H	M	M	H	H
Sentinel Crabapple	Malus 'sentinel'	20	12 U	P	M	H	M	M	H	H
Sugar Tyme Crabapple	Malus 'Sutgزام'	18	15 U	W	M	H	M	M	H	H
Redbud	Cercis canadensis	20	20 R	R	M	M	M	M	M	M

## Appendix B: Approved Street Tree List – Medium Trees (25 to 40 Feet Tall)

### City of Bowling Green Urban Forestry Division

#### Medium Deciduous Street Trees (20 Feet to 40 Feet)

Shape: O - Oval, R - Round, U - Upright, W - Weeping, P - Pyramidal  
 Tolerance: L - Low, M - Medium, H - High  
 Growth Rate: S - Slow, M - Medium, F - Fast  
 Insects & Disease Resistance: L - Low, M - Medium, H - High  
 Flower: W - White, Y - Yellow, R - Red, P - Pink

Common Name/Cultivar	Botanical Name	Height (ft.)		Spread (ft.)	Shape (ft.)	Flower	Growth Rate	Urban Tolerance			Salt Tolerance	Drought Tolerance	Insect Resistance	Disease Resistance
		30	20					30	25	20				
Hedge Maple	<i>Acer campestre</i>	30	30	R		S	S	H	H	H	H	H	H	
Tatarian Maple	<i>Acer tataricum</i>	25	20	O		S	S	H	H	H	H	H	H	
Norwegian & Pacific Sunset Maple	<i>Acer truncatum x platanoides</i>	35	25	U		S	S	H	H	H	H	H	H	
Trident Maple	<i>Acer buergerianum</i>	30	20	U		S	S	H	H	H	H	H	H	
Serviceberry - 'Allegheny', 'Snowcloud', 'Robin Hill', 'Cumulus', 'Lamarckii'	<i>Amelanchier laevis</i> <i>Amelanchier x grandiflora</i>	25	15	U	W	M	M	M	M	M	M	M	M	
European Hornbeam	<i>Carpinus betulus</i>	35	25	U		S	S	M	M	M	M	M	M	
American Hornbeam	<i>Carpinus caroliniana</i>	25	20	O		S	S	M	M	M	M	M	M	
Yellowwood	<i>Cladrastis kentukea</i>	30	40	O	Y	M	M	M	M	M	M	M	M	
Thornless Cockspur Hawthorn	<i>Crataegus crusgalli</i> "Inermis"	25	25	R	W	S	S	H	H	M	M	M	M	
Ohio Pioneer Hawthorn	<i>Crataegus punctata</i> 'Ohio Pioneer'	25	20	R	W	S	S	H	H	M	M	M	M	
Goldenrain Tree	<i>Koeleruteria paniculata</i>	30	30	R	Y	M	M	H	H	H	H	H	H	
Amur Maackia	<i>Maackia amurensis</i>	25	20	U	W	S	S	M	M	M	M	M	M	
American Hophornbeam	<i>Ostrya virginiana</i>	35	25	U		S	S	M	M	M	M	M	M	
Trinity Pear	<i>Pyrus calleryana</i> 'Trinity'	30	25	R	W	F	F	H	H	H	H	H	H	
Ivory Silk Tree Lilac	<i>Syringa reticulata</i> 'Ivory Silk'	30	20	O	W	M	M	H	H	H	H	H	H	
Hardy Rubber Tree	<i>Eucommia ulmoides</i>	40	30	O		M	M	H	H	H	H	H	H	
Chancellor Linden	<i>Tilia cordata</i> 'Chancellor'	35	20	P		F	F	H	M	M	M	M	M	

## Appendix B: Approved Street Tree List – Large Trees (X < 40 Feet Tall)

### Urban Forestry Division

#### City of Bowling Green Large Deciduous Street Trees (40 Feet and Over)

Shape: O - Oval, R - Round, U - Upright, W - Weeping, P - Pyramidal  
 Growth Rate: S - Slow, M - Medium, F - Fast  
 Flower: W - White, Y - Yellow, R - Red, P - Pink

Tolerance: L - Low, M - Medium, H - High  
 Insects & Disease Resistance: L - Low, M - Medium, H - High

Common Name/Cultivar	Botanical Name	Height (ft.)		Spread (ft.)	Flower	Growth Rate	Urban Tolerance	Salt Tolerance	Drought Tolerance	Insect Resistance	Disease Resistance
		50	40								
Autumn Blaze Maple	Acer x freemanii 'Jeffers Red'	50	40	R	F	F	M	L	M	H	H
Armstrong Maple	Acer x freemanii 'Armstrong'	45	15	U	F	F	M	L	M	H	H
Celebration Maple	Acer x freemanii 'Celebration'	45	20	U	F	F	M	L	M	H	H
Cleveland Norway Maple	Acer platanoides 'Cleveland'	40	30	U	M	M	H	H	H	M	M
State Street Maple	Acer miyabei	45	30	U	M	M	H	H	H	H	H
Black Maple	Acer nigrum	50	35	U	S	S	H	M	H	H	M
Emerald Lustre Norway Maple	Acer platanoides 'Pond'	45	40	R	M	M	H	H	H	H	M
Jade Glen Norway Maple	Acer platanoides 'Jade Glen'	45	40	R	M	M	H	H	H	H	M
Parkway Norway Maple	Acer platanoides 'Columnarbroad'	40	25	U	M	M	H	H	H	H	M
Bonfire Sugar Maple	Acer saccharum 'Bonfire'	50	40	R	M	M	M	M	M	H	M
Commemoration Sugar Maple	Acer saccharum 'Commemoration'	50	35	O	S	S	M	M	M	H	M
Endowment Sugar Maple	Acer saccharum 'Endowment'	50	20	U	S	S	M	M	M	H	M
Green Mountain Sugar Maple	Acer saccharum 'Green Mountain'	45	35	O	S	S	M	M	M	H	M
Legacy Sugar Maple	Acer saccharum 'Legacy'	50	35	O	S	S	M	M	M	H	M
Wright Brothers Sugar Maple	Acer saccharum 'Wright Brothers'	50	35	O	S	S	M	M	M	H	M
Hackberry	Celtis occidentalis	50	50	R	M	M	H	H	H	H	H
Turkish Filbert	Corylus colurna	40	30	P	M	M	M	M	M	H	H

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Tolerance: L - Low, M - Medium, H - High  
 Insects & Disease Resistance: L - Low, M - Medium, H - High

Common Name/Cultivar	Botanical Name	Height (ft.)	Spread (ft.)	Flower	Growth Rate	Urban Tolerance	Salt Tolerance	Drought Tolerance	Insect Resistance	Disease Resistance
Ginkgo	Ginkgo biloba	50	35	U	S	H	H	H	H	H
Sweetgum	Liquidambar styraciflua	60	25	P	M	H	H	H	H	H
Black Tupelo or Black Gum	Nyssa sylvatica	40	25	U	M	M	M	M	H	H
London Planetree	Platanus x acerifolia	80	80	R	M	H	M	M	H	M
Aristocrat Pear	Pyrus calleryana 'Aristocrat'	40	25	U	F	H	H	H	H	H
Sawtooth Oak	Quercus acutissima	50	50	R	M	M	M	M	H	H
Swamp White Oak	Quercus bicolor	60	60	R	M	M	M	M	M	H
Scarlet Oak	Quercus coccinea	50	40	O	S	M	M	M	M	H
Shingle Oak	Quercus imbricaria	50	40	O	M	H	M	M	M	H
Burr Oak	Quercus macrocarpa	55	45	O	S	H	M	M	M	H
Chinkapin Oak	Quercus muehlenbergii	50	50	R	S	H	M	M	M	H
Shumard Oak	Quercus shumardii	50	40	U	S	H	M	M	M	H
Bald Cypress	Taxodium distichum	70	30	U	F	H	H	M	H	H
Redmond Linden	Tilia americana 'Redmond'	35	25	P	M	M	M	M	M	H
Corinthian Linden	Tilia cordata 'Corzani'	45	15	U	M	H	M	M	M	H
Greenspire Linden	Tilia cordata 'Greenspire'	40	30	P	M	H	M	M	M	H
Crimean Linden	Tilia x euchlora	40	35	O	M	H	M	M	M	H
Sterling Linden	Tilia tomentosa 'Sterling'	45	35	P	M	H	M	M	M	H
Accolade Elm	Ulmus x 'Accolade'	50	35	U	F	H	M	M	M	M
Dynasty Elm	Ulmus parvifolia 'Dynasty'	40	40	R	F	H	M	M	M	M
Frontier Elm	Ulmus 'Frontier'	40	30	O	F	H	M	M	M	M
Pioneer Elm	Ulmus 'Pioneer'	50	50	R	F	H	M	M	M	M
Zelkova - Green Vase', 'Village Green'	Zelkova serrata	50	40	O	M	H	M	M	H	H

## Appendix C – Electric Infrastructure

### Before Digging Around Underground Power Facilities

- Customers served by underground power lines should be aware of landscape clearance and other guides before working around our equipment.
- Maintaining proper landscape clearances around the underground electrical equipment allows our crews to safely perform necessary inspections and maintenance work.
- Woody plants, ornamental grasses, shrubs and trees must be kept away at least 8 feet from the front of the pad (the side with enclosed doors) and at least 3 feet from the sides and back.
- Plantings located too close create a dangerous work area and may hamper efforts to restore power in an emergency. In addition, plants may be damaged by workers trying to access underground facilities.

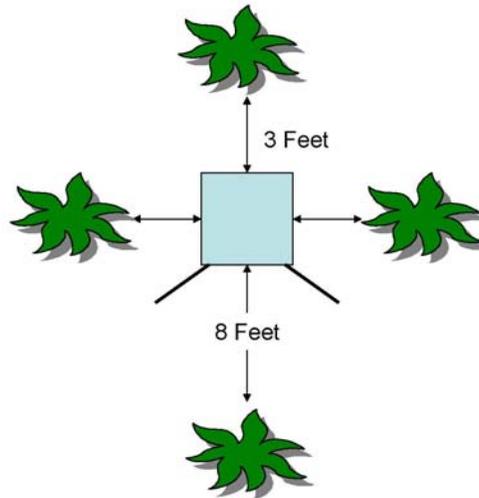
### Before Digging Around Underground Power Facilities

- Before adding or removing trees, shrubs, or other plantings (including stumps) obtain free safe digging information to avoid disturbing buried lines. The following work site information will be needed:
  - County, City or Township
  - Street Address
  - Intersecting streets or roads
  - Distance and direction from intersection
  - Extent of work (front/rear/both sides)
  - Date excavation will take place
  - Type of work
  - Your name
  - Contact phone number
  - Contractor contact person or other additional information
- Ohio Utilities Protection Service (OUPS) – Open 7 days a week including holidays. Call at least 48 hours ahead, but not more than 10 days before.
- 1-800-362-2764 or internet: [www.oups.org](http://www.oups.org)

## New Landscape Installation

### Electrical Equipment Specifications

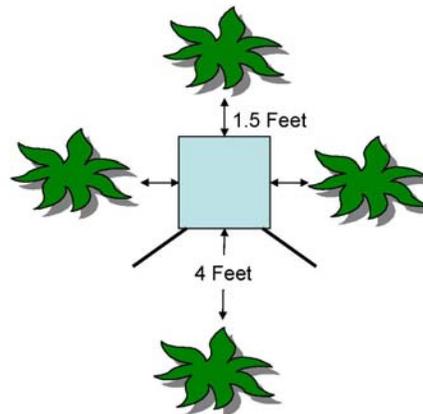
- Minimum of **8 feet** of clearance in front of the underground electrical equipment doors when planting trees, shrubs, and ornamental grass.
- Minimum of **3 feet** of clearance from all other areas of the equipment when planting.



## Existing Landscape Maintenance

### Electrical Equipment Trimming Specifications

- Minimum of **4 feet** of clearance in front of the equipment doors.
- Minimum of **1.5 feet** of clearance on all other areas.



# Types of Electric Equipment & Warning Stickers

## Underground Equipment



## Warning Stickers



This new landscape material was installed to hide the electric infrastructure in the pictures below. Mature landscaping has left a dangerous work area for utility crews and may hamper emergency restoration of service. Crews will need to prune and/or remove the landscape material to access the electric padmount transformer.

## Improper Landscaping



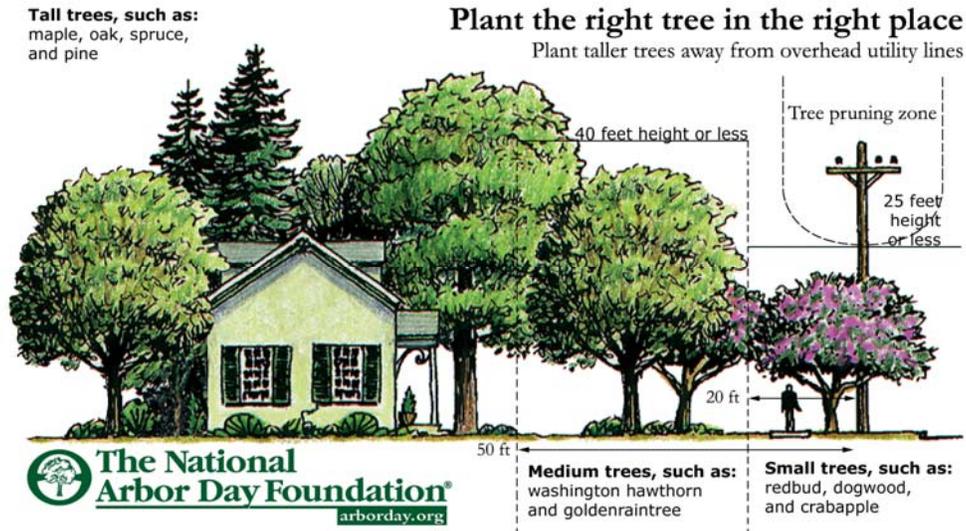
Proper landscape installation allows for utility crews work to safely during routine inspections and maintenance providing access to the doors of the equipment.

## Proper Landscape



## Appendix C – Electric Infrastructure

The City of Bowling Green’s overall goal is to “Plant the Right Tree in the Right Place.”



*Picture is courtesy of the National Arbor Day Foundation.*



**Line Clearance on West Wooster Street**

## Appendix D - Frequently Asked Questions

**Question: What are the green bags on trees?**

**Answer:** Treegators are for watering newly planted trees. Each Treegator holds 20 gallons of water (**Figure 16**).

**Question: Can the City Arborist look at my trees in my yard?**

**Answer:** The City Arborist can review trees on private property. This is by appointment only.

**Question: Does the City trim or remove trees?**

**Answer:** Yes, the City of Bowling Green does trim and remove City trees in the rights-of-way, City parks, Oak Grove Cemetery, and green spaces owned by the City. The City does not trim or remove trees on private property.

**Question: Why is the City trimming the trees in the subdivision?**

**Answer:** The City of Bowling Green tree crews are train pruning the smaller trees to remove dead or disease branches, crossing branches, and branches that impact pedestrian or motor vehicle clearance. Train pruning will encourage good form and structure which will result in a healthier mature tree.

**Question: Can the City Arborist look at my ash trees for Emerald Ash Borer?**

**Answer:** The City Arborist can review your ash tree for Emerald Ash Borer by appointment.

**Question: Is the City planning to remove all the ash trees in Bowling Green?**

**Answer:** The City of Bowling Green has implemented an Emerald Ash Borer Management Plan. The goal is to increase the diversity of the urban forestry in Bowling Green to reduce potential for outbreak of another invasive pest or disease.

**Question: Who do I call for a tree limb on the power lines?**

**Answer:** The City Arborist will review tree limbs on power lines for non-Emergency Services. Please contact the **Electric Division** at 419-354-6260 or the **Police Division** after business hours.

**Question: What is the procedure for planting a tree in the tree lawn area?**

**Answer:** Pick up an Adopt-A-Tree form at the City Administration Building on the Second Floor in the Public Works Office. Once the form is filled out and sent back to the City Arborist will review the planting site and species selection. The permit is either approved or not approved based on the planting site and infrastructure.

**Question: What size of tree can I plant in the treelawn?**

**Answer:** City Ordinance Chapter 99 (Trees & Weeds) states there must be a minimum distance of 4 feet wide tree lawn for small trees (20-25 feet at maturity), a minimum distance of 6 feet wide tree lawn for medium trees (25-40 feet maturity) and a minimum distance 8 feet wide tree lawn for large trees (40-60 feet).



**Figure 16 – Watering newly planted tree with Tregator bag.**

## Appendix E – Landscape Material

<i>native ferns</i>	
<i>botanical name</i>	<i>common name</i>
<i>Adiantum pedatum</i>	Maidenhair Fern
<i>Athyrium filix-femina</i>	Lady Fern
<i>Dennstaedtia punctiloba</i>	Hay-scented Fern
<i>Dryopteris marginalis</i>	Marginal Shield Fern
<i>Dryopteris spinulosa</i>	Toothed Wood Fern
<i>Matteuccia pensylvanica</i>	Ostrich Fern
<i>Onoclea sensibilis</i>	Sensitive Fern
<i>Osmunda cinnamomea</i>	Cinnamon Fern
<i>Osmunda regalis</i>	Royal Fern
<i>Polystichum acrostichoides</i>	Christmas Fern

<i>native grasses and grass-like plants</i>	
<i>botanical name</i>	<i>common name</i>
<i>Carex flaccosperma</i>	Blue Wood Sedge
<i>Carex muskingumensis</i>	Palm Sedge Grass
<i>Carex pensylvanica</i>	Pennsylvania Sedge
<i>Carex plantaginea</i>	Wide Leaf Sedge
<i>Carex platyphylla</i>	Blue Satin Sedge
<i>Carex radiata</i>	Eastern Star Wood Sedge
<i>Chasmanthium latifolium</i>	Northern Sea Oats
<i>Diarrhena americana</i>	Beak Grass
<i>Eriophorum angustifolium</i>	Cotton Grass
<i>Panicum virgatum</i>	Switch Grass
<i>Schizachryium scoparium 'The Blues'</i>	Little Blue Stem Grass
<i>Spartina pectinata 'Aureo Marginata'</i>	Cord Grass
<i>Sporobolis heterolepis</i>	Prarie Dropseed

<i>native vines</i>	
<i>botanical name</i>	<i>common name</i>
<i>Ampelopsis cordata</i>	American Porcelianberry
<i>Aristolochia durior</i>	Dutchmans Pipe
<i>Aristolochia tomentosa</i>	Woolly Dutchmans Pipe
<i>native vines continued</i>	
<i>Campsis radicans</i>	Trumpet Vine
<i>Celastrus scandens</i>	American Bittersweet
<i>Lonicera dioica</i>	Smooth Leaved Honeysuckle
<i>Lonicera prolifera</i>	Grape Honeysuckle
<i>Parthenocissus quinquefolia</i>	Virginia Creeper
<i>Passiflora incarnata</i>	Hardy Passion Vine
<i>Wisteria frutescans</i>	American Wisteria

*native shrubs*

<i>botanical name</i>	<i>common name</i>
<i>Aesculus parviflora</i>	Bottlebrush Buckeye
<i>Amelanchier stolonifera</i>	Running Serviceberry
<i>Andromeda glaucophylla</i>	Blue Bog Rosemary
<i>Aralia racemosa</i>	American Spikewood
<i>Aralia spinosa</i>	Devils Walkingstick
<i>Azalea arborescens</i>	Sweet Azalea
<i>Azalea calendulaceum</i>	Flame Azalea
<i>Azalea canescens</i>	Piedmont Azalea
<i>Azalea periclymenoides</i>	Pinxterbloom Azalea
<i>Azalea prinophyllum</i>	Roseshell Azalea
<i>Azalea prunifolium</i>	Plumleaf Azalea
<i>Azalea viscosum</i>	Swamp Azalea
<i>Calycanthus floridus</i>	Sweetshrub
<i>Ceanothus americanus</i>	New Jersey Tea
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Clethra alnifolia</i>	Summersweet
<i>Comptonia peregrina</i>	Sweet Fern
<i>Cornus amomum</i>	Silky Dogwood
<i>Cornus canadensis</i>	Bunchberry



Arrowhead  
Viburnum



Silky Dogwood



Serviceberry



Oak Leaf  
Hydrangea



Witch-hazel



American  
Holly



Red Cardinal  
Flower



Blazing Star

**native shrubs continued**

<i>Cornus drummondii</i>	Giant Gray Dogwood
<i>Cornus racemosa</i>	Gray Dogwood
<i>Diervilla lonicera</i>	Dwarf Bush Honeysuckle
<i>Euonymus americanus</i>	American Strawberry Bush
<i>Euonymus atropurpureus</i>	Eastern Wahoo
<i>Fothergilla gardenii</i>	Dwarf Fothergilla
<i>Fothergilla major</i>	Large Fothergilla
<i>Fothergilla monticola</i>	Mountain Fothergilla
<i>Hamamelis vernalis</i>	Vernal Witch Hazel
<i>Hamamelis virginiana</i>	Common Witchhazel
<i>Hydrangea quercifolia</i>	Oakleaf Hydrangea
<i>Hypericum kalmianum</i>	Kalm's St. Johnswort
<i>Ilex opaca</i> 'Female'	American Holly
<i>Ilex opaca</i> 'Male'	American Holly
<i>Ilex verticillata</i>	Winterberry
<i>Itea virginica</i>	Virginia Sweetspire
<i>Ledum palustre</i>	Crystal Labrador Tea
<i>Leucothoe axillaris</i>	Dwarf Leucothoe
<i>Lindera benzoin</i>	Spicebush
<i>Myrica pensylvanica</i>	Northern Bayberry
<i>Nemopanthus mucronatus</i>	Mountain Holly
<i>Neviusia alabamensis</i>	Alabama Snow Wreath
<i>Rhus aromatica</i>	Fragrant Sumac
<i>Rhus typhina</i>	Staghorn Sumac
<i>Rubus odorata</i>	Thimble Berry
<i>Salix sericea</i>	Silky Willow
<i>Sambucus canadensis</i>	American Elderberry
<i>Sambucus pubens</i>	Red Berried Elderberry
<i>Staphylea trifolia</i>	American Bladdernut
<i>Symphoricarpos alba</i>	Common Snowberry
<i>Vaccinium angustifolium</i>	Lowbush Blueberry
<i>Vaccinium corymbosum</i>	Highbush Blueberry
<i>Vaccinium macrocarpon</i>	American Cranberry
<i>Viburnum acerifolium</i>	Mapleleaf Viburnum
<i>Viburnum cassinoides</i>	Witherrod Viburnum
<i>Viburnum dentatum</i>	Arrowwood Viburnum
<i>Viburnum lentago</i>	Nannyberry
<i>Viburnum nudum</i>	Smooth Witherrod
<i>Viburnum prunifolium</i>	Blackhaw Viburnum
<i>Viburnum rufidulum</i>	Southern Blackhaw Viburnum
<i>Viburnum trilobum</i>	American Cranberrybush
<i>Xanthorhiza simplicissima</i>	Yellowroot
<i>Zenobia pulverulenta</i>	Dusty Zenobia

## Butterfly and Hummingbird Gardens



**Butterfly Bush**



**Purple Coneflower**



**Coreopsis**



**Salvia**



**Petunia**



**Zinnia**



**Tall Phlox**



**Beebalm**



**Butterfly Weed**



**Tall Aster**



**Daisies**



**Trumpeter Vine**

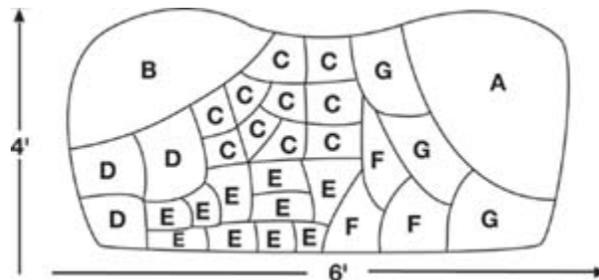
## Butterfly and Hummingbird Garden Design

This colorful perennial garden design is guaranteed to capture the attention of butterflies and hummingbirds. Giant-flowering, bright Orange Trumpet Vine is one of their all-time favorites, with flowers twice the size of regular trumpet vines. From mid summer to frost, the lavender and butterscotch spires of the Rainbow Butterfly Bush tempt these garden visitors with their sweet nectar. Other butterfly- and hummingbird-friendly perennials complement this vine and shrub combination to create a haven of beauty in your yard.



### Total number of plant: 31

- Rainbow Butterfly Bush (A - 1)
- Orange Trumpet Vine (B - 1)
- Hardy Perennial Lilies (C - 10)
- Everblooming Purple Coneflower (D - 3)
- Blazing Star Liatris (E - 10)
- Blue Columbine (F - 3)
- Dwarf Daylilies (G - 3)



## Rain Gardens

### Rain Gardens: Improve Stormwater Management in Your Yard

Stormwater refers to rain and melted snow and ice. Stormwater runoff from your roof, driveway and other hard surfaces in your yard is typically directed towards the street and into the municipal storm sewer system. This stormwater runoff, which has picked up harmful substances such as road salt, heavy metals and oils, ends up in streams, lakes or other water bodies, where it can harm water quality and aquatic habitat. Meanwhile, water used for lawns and gardens is drawn from the local drinking water supply.

There are several ways that you can reduce runoff and better use stormwater in your yard while ensuring proper drainage. One relatively easy and attractive method is a rain garden (**Figure 17**).

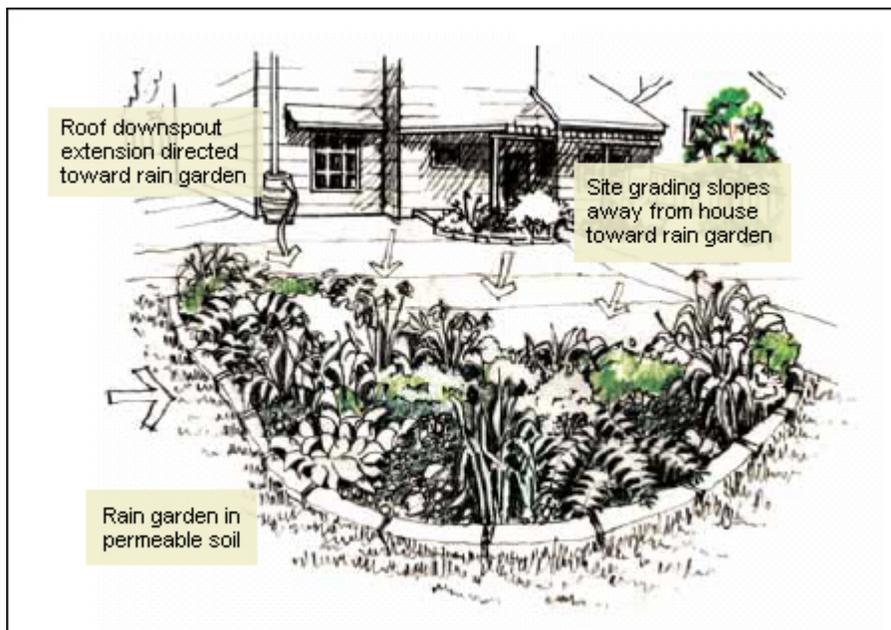


Figure 17 – Rain Garden



Sweet Joe  
Pyeweed

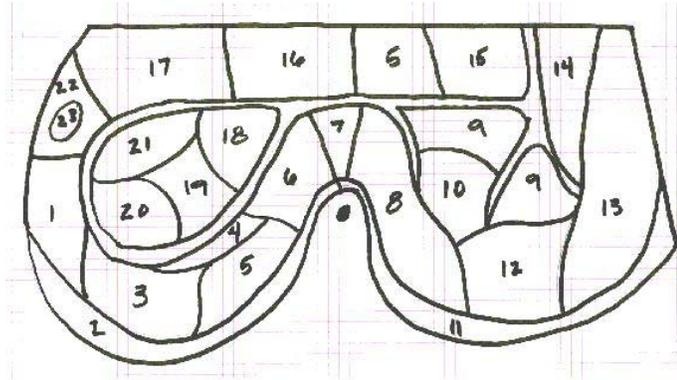


Boneset



Wild Geranium

## Rain Garden Design



1-Nodding Onion, 2-Praire Smoke, 3-Grant Blue Lobelia, 4-Anemone False Rue and Wood, 5-Yellow Coneflower, 6-Fringed Loosestrife, 7-Columbine, 8- Purple Coneflower, 9-Wild Geranium, 10-Lanceleaf Coreopsis, 11-Prairie Dropseed, 12-Obedient Plant, 13-Sweet Joe Pyeweed, 14-Prairie Alumroot, 15-Culver's Root, 16-Queen of the Prairie, 17-Cardinal Flower, 18- New England Aster, 19-Early Meadow Rue, 20-Boneset, 21-Virginia Bluebells, 22- Wild Petunia, 23-Golden Alexander



**Blue Lobelia**



**Yellow Coneflower**



**Purple Coneflower**



**Lanceleaf Coreopsis**



**Queen of the  
Prairie**



**Wild Petunia**