

APPENDIX

A

BUILDING A BETTER BOYERTOWN

TREE PLANTING GUIDELINES



Submitted by:
Design Committee
Tree sub-Committee
January 2006

Build a Better Boyertown

Urban Tree Planting Guidelines

Introduction

There are benefits that result from the thoughtful planning, planting and care of urban trees. BBB recognizes the substantial economic, environmental and aesthetic importance of establishing and maintaining a tree inventory in the Borough of Boyertown's main street and byways. Trees help to preserve and protect aesthetic and scenic beauty while preventing erosion of topsoil and protecting against flood hazards and the risk of stream bank erosion. Through physiological processes, trees counteract the pollutants in the air; protect against high winds, and maintain the climatic balance. Their shape and size provide shade as well as privacy. In addition, trees provide habitat to a variety of wildlife species, and protect valuable historical and community assets. Studies have shown that trees increase commercial and residential property values.

Proper pruning techniques and removal procedures will contribute to the overall aesthetic appearance and health of urban trees. The following guidelines are intended to assist Arborists in achieving a standard pruning and removal practice in maintaining the Borough of Boyertown's urban forest. The standards and guidelines follow, closely, those of the International Society of Arboriculture and those of the National Arborist Association.

I. Purpose

The purpose of these guidelines are to insure the protection of existing trees, removal of trees that are incompatible with planned improvements and planting of new trees that are in harmony with other trees and improvements in the right of way.

II. Tree Selection

Most trees have the potential to outlive the people who plant them. Therefore the impact of the decision to select and plant a tree will influence the community for years to come. Therefore a tree must be matched to its site. The following factors must be considered:

A. Tree function – Why is the tree being planted? Will it provide shade, fruit, seasonal color or act as a windbreak or screen? Some or all of the above?

B. Form and Size – What is the size and location of the planting site? Small, medium or large tree? Spreading, vase or columnar habit? Are there underground or overhead utility wires nearby? Are there sewer and water lines in the vicinity? Are there sidewalks, driveways and signs to consider? Are there other trees to watch out for?

C. Site Condition – What is the condition of the soil at the plating site? Will concrete have to be cut and removed? Is the soil deep, fertile and well drained or is it shallow, compact and

infertile? Is there sufficient sun? Will human and animal activity interfere with the trees ability to thrive? Will it need additional protection? What is the hardiness zone of the planting area?

D. Projected maintenance – What is the required maintenance of the tree and site? Water needs? Fertilization needs? Pruning needs? Pest and disease control?

Age of Tree	Water	Feeding	Pruning	Pit Care
Newly planted through 1st year. Stake and wire to prevent damage in high traffic areas. Check wires often to prevent choking tree.	5-8 gallons/wk until ground freezes. Resume watering at thaw. Increase to 5-8 gallons 2/wk during extreme hot or dry weather.	Add 5 year slow release fertilizer.	Prune out dead, damaged and diseased branches. DO NOT TOP OFF. Check root flare. Excavate if buried.	Put up tree guards anytime. Mulch with compost. Plant shallow rooted annuals such as marigolds, vinca, begonia, petunia or portulaca.
After 2 nd year. Check root flare for visibility. Excavate if buried.	5-8 gallons/wk until ground freezes. Resume watering at thaw.	If a 5 year fertilizer was used at planting no need to fertilize again. Do a soil test to establish need.	Prune out dead, damaged or diseased branches and begin limbing up to 6'. Never remove more than 1/4 of a live tree's branches in one year.	Weed and lightly cultivate the top 2"-3" of soil. Renew compost mulch. Clear trash and debris.
Adolescent, 3-5 th year. Check root flare and excavate soil if buried.	Water as needed during dry spells.	None needed if mulched with compost each year. Do a soil test to establish need.	Prune out dead, damaged and diseased branches. Train or prune branches away from porches and utilities.	Weed and lightly cultivate the top 2"-3" of soil. Renew compost mulch. Clear away trash and debris.
Older Check root flare and excavate if buried.	Water as need during dry spells.	None needed if mulched with compost each year. Do a soil test to establish need.	Limited pruning. At this stage, pruning should be done by a professional or experienced property owner.	Weed and lightly cultivate the top 2"-3" of soil. Renew compost mulch nad clear away trash and debris.

For additional tips on tree care, please ask for the Tree Care Flyer Series at the Build a Better Boyertown office.

E. Nursery Stock - Great care should be taken to insure that only the best nursery stock is selected for street tree planting. Local nurseries offer a selection of in stock trees and ordering information (See Informational Resource Flyer available from Build a Better Boyertown office).

III. Suggested Tree List

The main streets and byways of the Borough of Boyertown require special consideration when selecting trees for planting. Particular consideration should be given to native species but other “exotic” or ornamental trees, especially those trees made popular during the Victorian era, may be proposed by business or residential property owners and approved by the Borough of Boyertown. The approval of street trees for planting is determined by the following criteria:

- *Longevity
- *Disease and pest resistance
- *Non-Invasive root systems
- *Trees which are open at the base to preserve sight lines for safety
- *Trees that do not drop fruit or debris on sidewalks, curbs or streets

The following are recommended street trees for The Borough of Boyertown:

Small Trees - Under 30'

Acer buergeranum - Trident Maple
Acer campestre - Hedge Maple
Acer ginnala - Amur Maple
Acer tataricum - Tartarian Maple
Crataegus crus-galli 'Inermis' - Thornless Hawthorn, tree form
Crataegus laevigata 'Superba' - Crimson Cloud Hawthorn tree form
Crataegus phaenopyrum - Washington Hawthorn, tree form
Crataegus viridis - Winter King Hawthorne
Prunus triloba - Flowering Plum
Malus (selected varieties) - Crabapple
Syringa reticulata - Japanese Tree Lilac

Medium Trees - 30' - 46'

Aesculus x carnea 'Briotii' - Ruby Red Horsechestnut
Cercidiphyllum japonica - Katsura tree
Cladrastis lutea - Yellowwood
Crataegus lavalleyi - Lavalley Hawthorn
Koelreuteria paniculata - Golden Rain Tree
Malus (selected varieties) - Crabapple
Ostrya virginiana - Hop Hornbeam
Phellodendron amurense - Amur Cork Tree
Prunus x yedoensis - Yoshino Cherry
Ulmus parvifolia - Chinese Elm
Quercus acutissima - Sawtooth Oak

Large Trees Over 47'

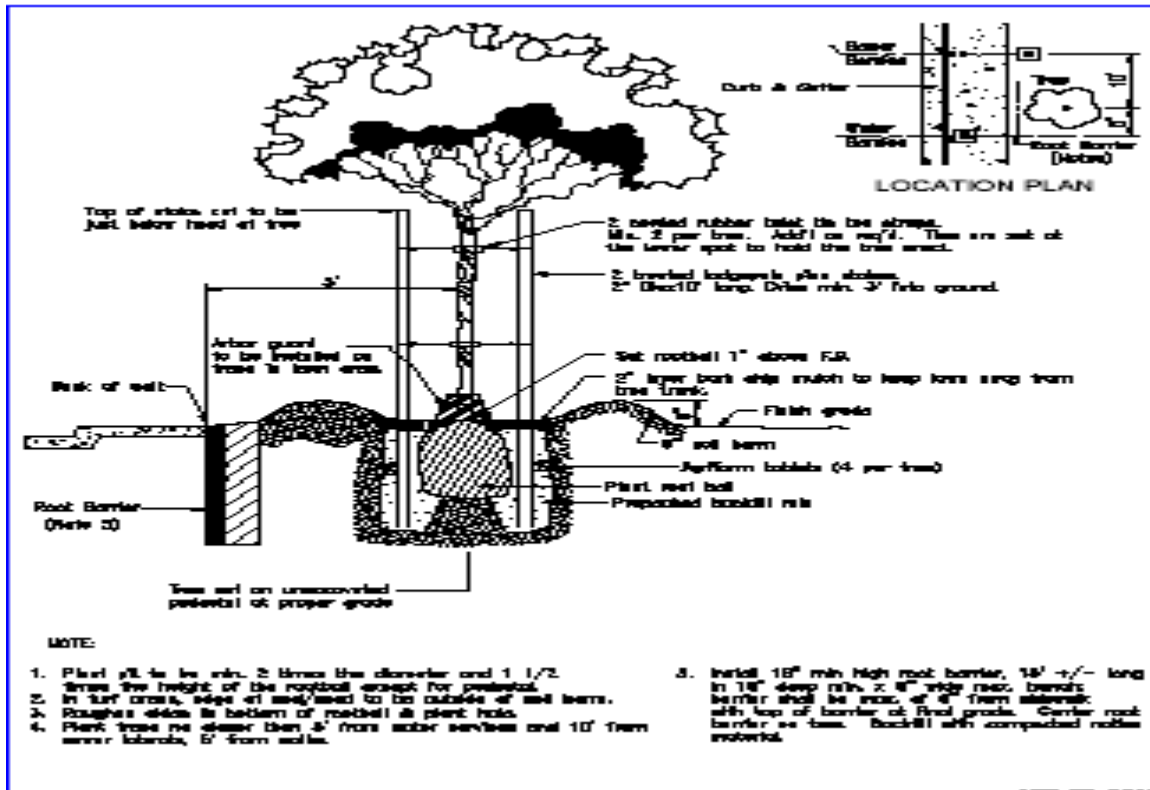
Acer rubrum (selected cultivars) - Red Maple
Celtis occidentalis - Hackberry
Corylus colurna - Turkish Filbert
Fraxinus pennsylvanica 'Patmore' - Patmore Green Ash.
Gleditsia triacanthos (selected cultivars) - Honey Locust - a) Halka, b) Moraine, c) Shademaster
Ginkgo biloba (male selections only) - Ginkgo
Liquidambar styraciflua - Sweetgum
Quercus rubra - Red Oak
Quercus macrocarpa - Bur Oak
Quercus palustris - Pin Oak
Sophora japonica - Japanese Pagoda Tree
Tilia cordata - Little Leaf Linden
Zelkova serrata (selected cultivars) - Japanese Zelkova - a) Green Vase, b) Village Green

Columnar Trees for Narrow Streets

Acer rubrum 'Armstrong' - Armstrong Columnar Red Maple
Carpinus betulus fastigiata - Pyramidal European Hornbeam
Ginkgo biloba 'Princeton Sentry' - Princeton Sentry Ginkgo Grafted Male Variety
Prunus sargentii 'Columnaris' - Columnar Sargent Cherry
Quercus robur 'Rose Hill' - Rose Hill English Oak

IV. Planting

Once a street tree has been selected for planting and a site has been designated, then the tree should be planted under the supervision of a certified Arborist and/or Landscape engineer and in cooperation with the Borough Engineer. The following diagram and guidelines for Borough street plantings should be followed:



*For tree planting, a minimum of 6'x6' or 8'x8' planting strip will be needed. Ideally, the more soil space the better.

*Unless the soil in the hole is severely contaminated, excavate the tree pit in existing soil with amendments such as compost, peat and rotted manure.

*The planting hole should be dug to at least twice the diameter of the root ball and the exact depth or one inch shallower than the root ball. The diameter of the hole should be at least twice the root ball or root mass. The area the exact depth of the root ball should be only under the plant and is considered the pedestal to set the tree upon. This area will not settle, causing the tree to grow at a depth below the original grade. The remainder of the hole diameter around the pedestal can be excavated 1.5 times deeper than the root ball.

*Original soil should be used as backfill, loosened and cleaned of debris. A watering berm or watering reservoir should be placed over the root ball so the root ball gets adequate moisture. You may also consider a bagging device that wraps around the base of the tree that releases water slowly. The tree should be watered regularly the first two years until considered established, then as needed thereafter, depending on the weather.

*The tree should be staked with two stakes (in most climates, two should serve for stability the first two years or so) and loosely tied to the stakes at the lowest point on the trunk that keeps the foliar canopy upright so the canopy can move in the wind and promote stronger rooting. The low branches should be retained for the first several years and pinched back to stay around twelve or twenty four inches long and clear of walkways, mowing, etc. depending on the site. Trees should only be minimally pruned for a central leader and remove co-dominant stems. Any low temporary

laterals should be removed when they reach 1/2" or 3/4" diameter, or if they become water sprouts shooting up vertically.

*Mulch the newly planted tree to a depth of 3" with organic matter such as shredded mulch and peat moss. This will help conserve moisture, help in weed control and protect the roots from extreme heat and cold and will make the tree pit more attractive.

*Protect the tree pit and bark from pet urine and feces, staples, nails and car doors and cats.

*Prune dead, broken or diseased branches on the tree and prune if necessary. Never prune or take corrective action until after at least two years after planting.

*Mature street trees require periodic inspection to keep them healthy and to spot environmental conditions before they become a large problem

*Fertilize your tree with a complete fertilizer consisting of Nitrogen, Phosphorous and Potassium in the fall or early spring. Different trees have different fertility requirements so be sure that you apply the correct fertilizer at the proper rate. The Penn State Extension Service offers suggestions for this operation.

V. Pruning – Trees that receive the appropriate pruning measures while they are young will require little corrective pruning when they mature.

A. Pruning Young Trees

Where and how you make the cut is critical to a tree's response in growth and wound closure. Pruning should be applied with good judgment in order to maintain, as much as possible, the natural form of the tree. Pruning cuts should be made just outside the branch collar, made carefully, at the correct location, leaving a smooth jagged edges or torn bark (Figures 1.1). Hand pruning shears or pruning saws are acceptable tools for pruning.

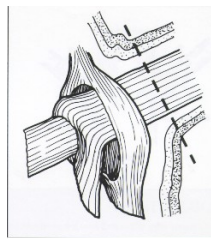
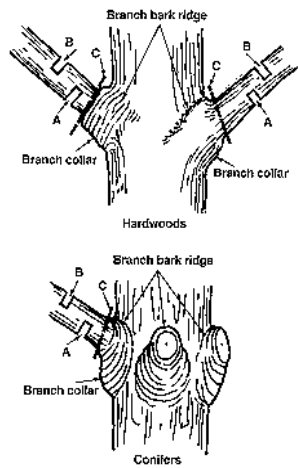


Figure: 1.1

Each cut should be made carefully, at the correct location, leaving a smooth surface with no shears, lopping. **Topping is not**

an acceptable pruning technique.



Cutting technique

Large or heavy limbs should be removed using three cuts. The first cut undercuts the limb one or two feet out from the parent branch or trunk. A properly made undercut will eliminate the chance of the branch peeling or tearing bark as it is removed. The second cut is the top cut which is usually made slightly further out from the limb than the undercut. The third cut is to remove the stub (Figure 1.2).

Wound dressing is not recommended.

Rules of Thumb

Avoid removing the tip of the dominant leader on young trees. Secondary branches that outgrow the leader should be removed.

Figure: 1.2

If two branches develop from apical buds at the tip of the same stem, they will form **co-dominant** branches (Figure 1.3). It is usually best if one is removed when the tree is young.

If there is **included bark** (Figure 1.4) within crotches or co-dominant limbs, the branch attachment may be weakened and such branches are preferably removed.

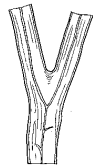


Figure: 1.3



Figure: 1.4

On large-growing trees (except whorl-branching conifers) branches that are more than 1/3 the diameter of the trunk should be well-spaced along the trunk (at least 18 inches apart). Avoid allowing two scaffold branches to arise one above the other on the same side of the tree (Figure 1.5). Maintain one half the foliage on branches arising in the lower 2/3 of the tree. For individual limbs, leave lower and inside branches along the limb so that the limb can develop taper and that stress can be evenly distributed.

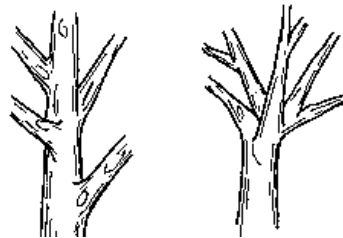


Figure: 1.5

Clearance Standards

The height of the lowest scaffold limb must allow for line of site safety until the tree is old enough to prune up. Select main branches to give radial distribution.

- The lowest branch extending over public sidewalks must be no less than 2.44 meters (8 feet) in vertical alignment.
- The lowest branch reaching over a roadway must have no less than 4.27 meters (14 feet) in vertical clearance as measured at the curb-line.
- Trees along public trail systems or walkways must have approximately 3 meters vertical clearance and 30.5 centimeters beyond each edge of the trail or path (two-way bike paths should have 30 meters of side+ clearance).

B. Pruning Mature Trees

For mature trees, the most common reasons for pruning of Borough trees include removal of dead, weak, or diseased branches, removal of crowded or rubbing limbs, and the elimination of hazards. Avoid heavy thinning of mature trees, where appropriate.

The various pruning methods used by Borough Arborist's include, thinning (Crown thinning), dead-wooding (Crown cleaning), shaping (Crown cleaning, Crown reduction), and

elevating (Crown-raising). These are the techniques recommended on all Borough owned trees. **Topping is not an acceptable pruning technique.** Spikes are not to be used to climb trees.

Crown Cleaning

The removal of dead, dying, diseased, crowded, weakly attached and low-vigor branches from the crown of a tree (Figure: 2.1).

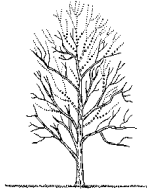


Figure: 2.1

Crown Thinning

This 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 (Figure: 2.2).



Figure: 2.2

Crown Raising

Removal of the lower branches from a tree (Figure: 2.3) in order to provide clearance for buildings, vehicles, pedestrians and vistas. Includes side pruning (Figure: 2.4).

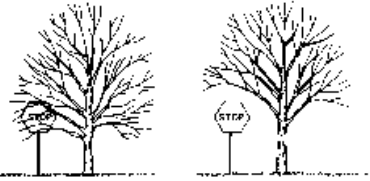


Figure: 2.3

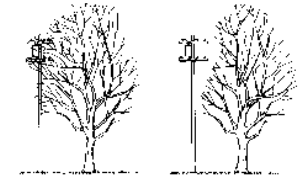


Figure: 2.4

Crown Reduction

This reduces the size of a tree, often for clearance of utility lines. This is usually 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) (Figure: 2.5).

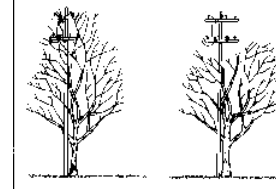


Figure: 2.5

ANSI A300 STANDARDS

- ◆ Proper cuts will be made
- ◆ Spikes will not be used to climb
- ◆ No more than 1/4 (25%) of the foliage of the canopy or individual limbs will be removed in any one season
- ◆ At least 1/2 the foliage will remain evenly distributed in the lower 2/3 of the canopy, after pruning is complete

Rules of thumb

Size, species, age, and pruning objectives should be taken into account when determining the amount of live tissue that should be removed. For Mature trees, no more than one fourth of a tree's leaf bearing crown should be removed.

Avoid pruning just after the spring growth flush. This can stress the tree.

Avoid pruning during periods of active transmission periods of some tree diseases, such as oak wilt (this disease can be spread when pruning wounds allow spores access into the tree).

Cutting technique

Large or heavy limbs should be removed using three cuts. The first cut undercuts the limb one or two feet out from the parent branch or trunk. A properly made undercut will eliminate the chance of the branch peeling or tearing bark as it is removed. The second cut is the top cut which is usually made slightly further out from the limb than the undercut. The third cut is to remove the stub. Refer to, Pruning Young Trees (Figure: 2.6). Wound dressing is not recommended.

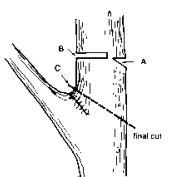


Figure: 2.6

Clearance standards

Select main branches to give radial distribution.

- The lowest branch extending over public sidewalks must be no less than 2.44 meters (8 feet) in vertical alignment.
- The lowest branch reaching over a roadway must have no less than 4.27 meters (14 feet) in vertical clearance. Trees along public trail systems or walkways must have approximately 3 meters vertical clearance and 30.5 centimeters beyond each edge of the trail or path (two way bike paths should have 30 meters of side clearance).

VI. Removal of Trees –

The removal of trees is a delicate and possibly dangerous task requiring highly skilled professionals. No tree will be removed unless judged by the Borough of Boyertown to represent a hazard to life or property. Dead or dying trees should be removed for health, safety, aesthetics and to enable competing species to develop and mature. Occasionally, in certain instances, live trees should be removed when they interfere with other trees, buildings, driveways, and utility wires.

Signage

The public must be informed of the impending removal of any tree, in conformity with the Borough of Boyertown Street Tree Ordances. The only exception allowed is when the tree represents an immediate hazard to life or property.

Notice must be posted for at least **fourteen days** prior to removal. These notices must be placed in a conspicuous place without obstruction, close to eye level at a point near the closest street or roadway.

Technique

When working near roadways, proper signage and traffic regulators must be in place as per the Borough Traffic By-law standards.

For a standard removal, stumps should be cut as flush as possible to the ground line.

All brush and wood waste should be chipped and/or disposed of.



VII. Street Tree Inventory –

A street tree inventory is necessary in order to establish a current list of trees that need to be managed, to facilitate planning and scheduling and to monitor maintenance tasks as well as to assist in the preparation of a budget. A good street tree management plan will maximize public benefits from street trees and to minimize public expense in order to achieve these benefits.

A first step in implementing a solid management plan is to create a Master Street Tree Planting Plan. This inventory should do the following:

1. Accurately identify the number of trees present within the Borough of Boyertown's boundaries.
2. Document their species.
3. Describe their actual location.
4. Determine the current size and the projected size of the shade canopy.
5. To record needs and problems of each tree such as fertilizing, disease, shade canopy, insect damage, conflicts with utilities and other evaluative data.
6. To use the information gathered to program tree care activities and point out needs for additional plantings or alternatives to the streetscape.

At the time of this guidelines writing, January 2006, The Berks County Conservancy has been commissioned by the Berks County Community Foundation to establish a Street tree Inventory of the Borough of Boyertown.

VIII. Recommendations –

These guidelines represent the initial effort by the Design Committee of the Building a Better Boyertown community organization to establish groundwork for the continued and future efforts to “green” the Borough of Boyertown. The Borough of Boyertown does not currently have ordinances covering the planting, care and maintenance of the trees within its jurisdiction.

These guidelines are meant to bridge the gap between private and public interests, namely, The Berks County Community Foundation, Boyertown Borough Council, Building a Better Boyertown and the citizens of Boyertown. They should be taken together with additional analysis of Boyertown's “green” status so that the community can move forward with a cohesive strategy for planting trees.

IX. Additional Resources –

The Building a Better Boyertown office has several Informational Flyers available. Please ask for the Tree Care Informational Flyer Series:

Tree Care

Tree Pit Care

Websites About Trees

Tree Sources and Resources

Local Tree Care Professionals

Submitted by:
Tree Subcommittee-
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