Village of Mount Prospect
Arboricultural Standards Manual

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Village of Mount Prospect Arboricultural Standards Manual

INTRODUCTION

The following Arboricultural Standards Manual is designed to supplement and support the Village of Mount Prospect Urban Forest Protection and Planning Ordinance. The objective of this manual is to present the best tree planting, maintenance, protection and removal techniques based on accepted arboricultural standards. The guidelines and standards presented in this manual apply only to public trees as defined by the Urban Forest Protection and Planning Ordinance. The Village Forestry/Grounds Superintendent has the authority to revise and maintain this manual.

The definition of terms section for this manual is consistent with and may be found in the definitions section of the Village of Mount Prospect Urban Forest Protection and Planning Ordinance.

Safety Requirements

In all operations related to public tree planting, maintenance and removal, safety of workers, citizens and the general public shall be of primary importance. Contractors are required to follow the safety requirements for tree care operations as presented in the most current version of American National Standards Institute ANSI Z133.1 (See Appendix 1).

PLANTING

1. ***Plant Materials***

a. All trees shall be grown in a nursery located in the northern half of Illinois or the southern half of Wisconsin and licensed by the respective State.

b. All trees shall conform to the American Standard for Nursery Stock as approved by the American National Standards Institute, Inc. and issued as the most recent version of ANSI Z60.1 (See Appendix 2).

c. Trees shall have a minimum trunk diameter, measured six inches (6") above the root flare, of two and one-half inches (2 ½") unless specific written permission is granted otherwise by the Director of Public Works.

d. Trees selected for planting in the Village shall be healthy, free of insects and diseases, bark bruises, and scrapes on the trunk or limbs before and after planting. Trees shall be single-stemmed and have a central leader that can be pruned so the lowest limb is at least 6' above ground, with the exception of small

growing trees such as crabapples. All trees shall have a balanced crown and a well developed root system.

e. Unless a tree is to be transplanted by mechanized tree spade, all tree roots shall be balled and burlapped, or containerized. Nylon twine shall not be used for balling. Minimum ball size must conform to the most recent edition of ANSI Z60.1. Root balls shall be intact at the time of planting. Bare root plantings are discouraged but may be approved in special cases by the Director of Public Works.

f. The root flare of balled and burlapped trees shall be within the top one-half inch (1/2") of the root ball. See Figure 1.

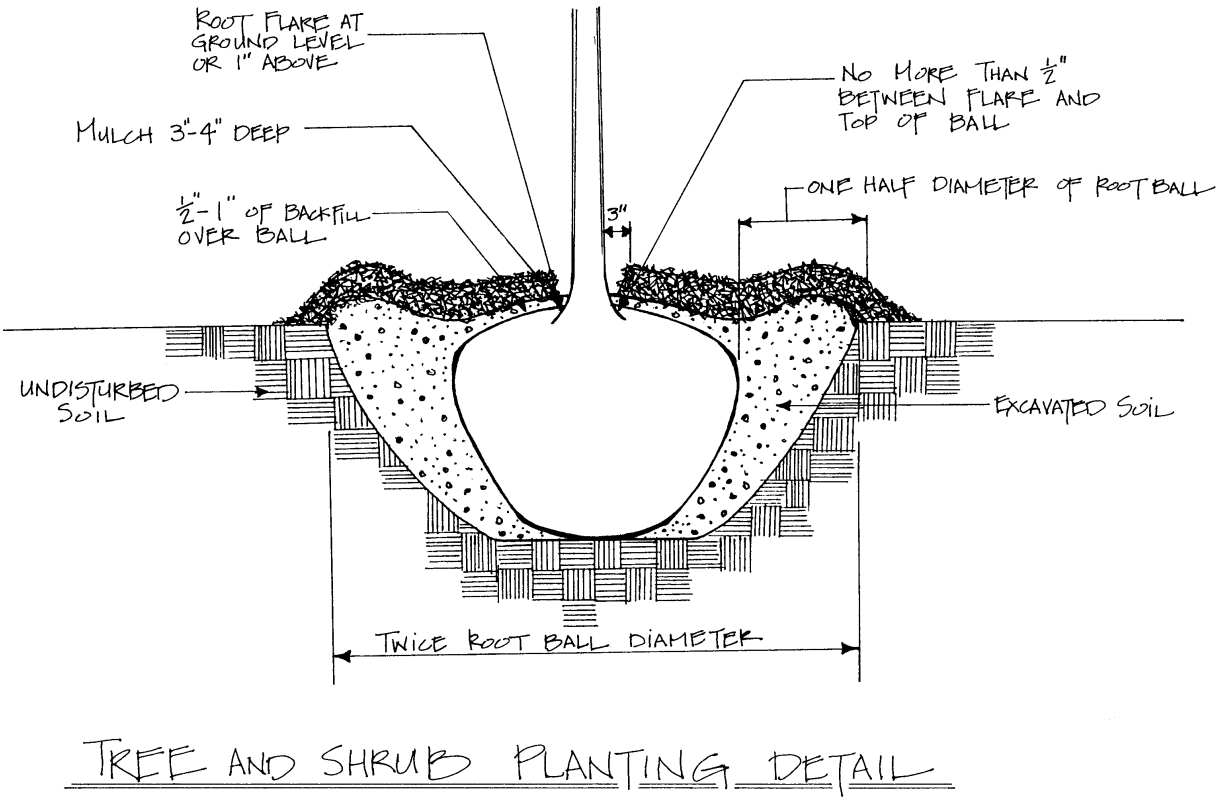


Figure 1

2. **Transportation and Handling**

a. Trees shall be covered during transport to the planting site.

b. Plant material shall be handled in a manner as to cause the least amount of damage during the planting process

c. Balled and burlapped plants shall always be handled by the soil ball. Under no circumstances shall they be dragged, lifted or pulled by the trunk or foliage parts.

d. Plants shall be handled, secured or covered so as to prevent damage from wind and vibration. Plants shall never be allowed to drop, but shall always be lowered in a controlled manner.

e. Plant material shall be planted the day it is taken to the planting site, or it shall be watered and/or covered and placed in a shady area to prevent drying out or freezing.

3. Planting Techniques

a. The spring planting season shall begin when the ground has sufficiently thawed and end approximately one week before buds begin to break. The spring planting season may be extended through the end of May as long as the trees have been dug at the nursery before bud break, and stored properly until planting. The fall planting season will begin after the leaves have fallen from deciduous trees and end when the ground has frozen.

b. Tree holes may be machine dug only with the written approval of the Director of Public Works. All other tree planting holes will be manually dug. If the existing lawn is damaged, it shall be the responsibility of the applicant or contractor to restore the lawn to its original condition. The applicant or contractor shall also secure all necessary underground utility locations prior to planting.

c. The planting hole shall be a minimum of twice the diameter of the ball, with sides sloping inward toward the bottom of the root ball (see Figure 1). The planting hole shall not be dug to a depth deeper than the depth of the root ball. The root ball will be placed on undisturbed subgrade. The resulting hole shall place the root flare of the tree at or not more than one inch (1") above the grade of the surrounding soil.

d. Excavated planting pits that are open when work is not in progress pose a hazard to pedestrian traffic and shall be adequately barricaded with approved warning devices. No planting pit may remain open in excess of 24 hours .

e. The tree shall be planted so that the root collar is at or slightly (no more than 1 inch) above grade.

f. The tree shall be placed plumb and in the center of the planting hole.

g. All ropes, strings, nails, burlap wrapping, and wire baskets shall be removed from the upper one-half of the root ball after the tree has been placed in the planting hole.

h. In most instances, the backfill around the ball shall be the same soil as that which was removed from the hole; however, in cases where rocks, stones, etc., are encountered, top soil shall be used.

i. When approximately two-thirds to three-fourths of the planting pit has been backfilled, the hole shall be watered so as to settle the soil around the roots. After the water has been absorbed, the planting pit shall be filled with the planting soil, tamped lightly to grade, and watered thoroughly again. Any further settlement shall be brought to grade with additional planting soil.

j. A shallow berm of soil, approximately 3-4" high shall be formed just inside the edge of each planting hole to serve as a water reservoir.

k. After planting, planting contractors shall apply a three to four inch layer of wood chips or other approved organic mulch to the top of the planting hole to within approximately 3-4" of the trunk. No mulch shall be placed in direct contact with the trunk of the tree.

l. Any excess soil, debris or trimming shall be removed from the planting site immediately upon completion of planting.

m. The trunk of the tree shall not be wrapped. Any existing trunk wrapping materials shall be removed and disposed of.

n. All tags, wires and plastic ties shall be removed from each tree unless otherwise specified.

4. <u>Planting Locations</u>

Planting locations of trees shall be subject to the following regulations:

a. Trees of large-sized varieties shall be planted no closer than forty feet(40') from any other large sized variety of parkway tree. Trees of medium-sized varieties shall be planted no closer than thirty feet (30') from

any other medium-sized variety of parkway tree. Trees of small varieties shall be planted no closer than twenty feet (20') from any other small sized variety of parkway tree. New tree plantings of all sizes can be as close as twenty feet (20') to existing conifer trees.

When planting a new tree next to an existing variety of a different size class, minimum spacing shall be calculated by averaging the spacing requirements for the two size classes. For example, a new medium-sized variety may be planted 35' from a large variety, or 25' from a small variety.

b. The above minimum spacing standards may be modified by the Director of Public Works for new plantings in downtown areas zoned as B5 or B5C, particularly where openings in pavement are required to establish planting sites. In these areas, trees may be placed on a closer spacing recognizing the limited availability of planting spaces and the advantages of allowing trees greater access to larger volumes of soil through cluster plantings.

In areas where openings in pavement are required to establish planting sites, or where above ground planters are to be used, the most restrictive space limitation is usually associated with the volume of acceptable rooting habitat as opposed to limitations of crown space. For this reason, minimum planting spacing in these areas is determined by available soil volume.

Minimum soil volumes are intended to reflect acceptable rooting habitat. This eliminates most urban soils that currently reside under sidewalks and roads because of the compaction necessary to support pavement, and the absence of oxygen and moisture exchange. In many cases, minimum soil volumes can only be achieved by excavating existing compacted soils and replacing them with suitable natural or engineered soils. (Engineered soils are mixtures of organic and mineral soils with coarse gravel. The gravel can be compacted to the densities necessary to support pavement, and the soil suitable for root growth fills the large pores between the gravel elements.)

For single tree planting in pavement cut-outs where no modification is made to soil beyond the planting pit, the following minimum soil volumes are required:

- **Small growing trees - 200 cubic feet (for example, a two foot deep pit must be accompanied by a 10 foot by 10 foot or equivalent opening.) The smallest surface dimension must be at least four feet.**

- **Medium growing trees - 400 cubic feet (for example, a two foot deep pit must be accompanied by a 10 foot by 20 foot or equivalent opening.) The smallest surface dimension must be at least five feet.**

- **Large growing trees - 600 cubic feet (for example, a two foot deep pit must be accompanied by a 10 foot by 30 foot or equivalent opening.) The smallest surface dimension must be at least seven feet.**

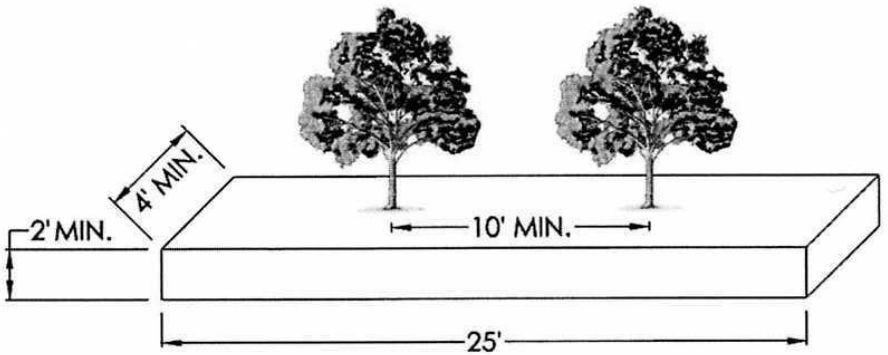
- **Soil must be at least two feet deep. Soil may be deeper than four feet, but four feet is the maximum dimension that may be used in the calculation of minimum soil volume. (For example, a 10 foot by 10 foot opening can yield a maximum of 400 cubic feet of soil volume.)**

- **Above ground minimum spacing for small trees is 10 feet, for medium trees is 20 feet, and for large trees is 30 feet. These requirements may be modified by approval of the Director of Public Works.**

Two trees that share soil volume may be planted in a single planting pit without increasing the minimum soil volume required for one tree if they are suitably placed. For example, a single large-growing tree is required to have a minimum of 600 cubic feet of soil. If the planting site is two feet deep, a 7 foot by 43 foot concrete cut out yields the minimum soil volume. Two large trees may be planted 30 feet apart in the same soil volume. If desired, paving bricks or other permeable surfacing material can be used to cover the central portion of the planting space between the two trees, providing they allow adequate penetration of air and water.

For each additional tree over two per planting area, the minimum soil volume requirement increases by 65% of the minimum requirement for one tree. For example, two medium sized trees can be planted in 400 cubic feet of soil. If a third tree were to be added, 65% of the minimum requirement for a single medium size tree (260 cubic feet) would need to be added. The three trees would also need to be planted at least 20 feet from each other. Therefore, an excavated planting site 2 feet deep, 6 feet wide and 55 feet long would accept three medium sized trees. Note that previously described soil volume requirements are depicted graphically in Figure 2.

SMALL SPECIES



NEED 200 CU.FT. FOR 1-2 TREES,
330 CU.FT. FOR 3 TREES,
460 CU.FT. FOR 4 TREES

NEED 10' BETWEEN TREES

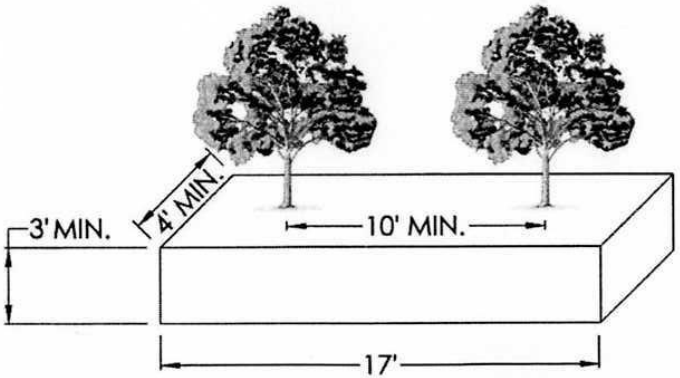
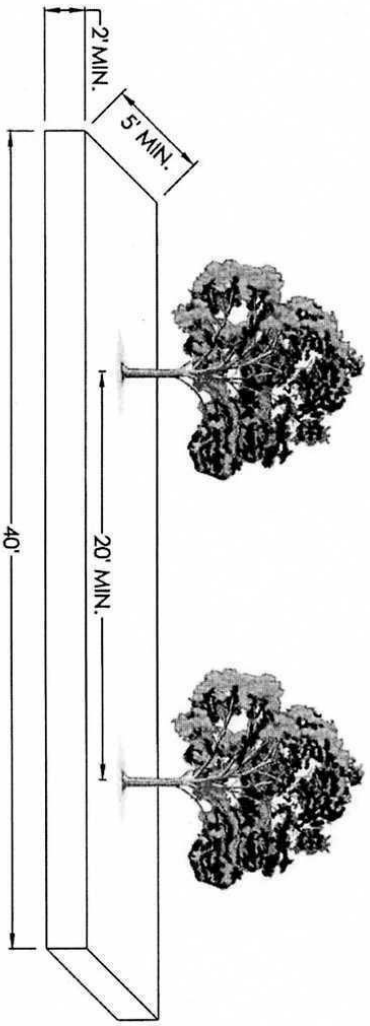


Figure 2

Figure 2

Soil Requirements for Trees in the Downtown

MEDIUM SPECIES



NEED 400 CU.FT. FOR 1-2 TREES,
660 CU.FT. FOR 3 TREES,
920 CU.FT. FOR 4 TREES

NEED 20' BETWEEN TREES

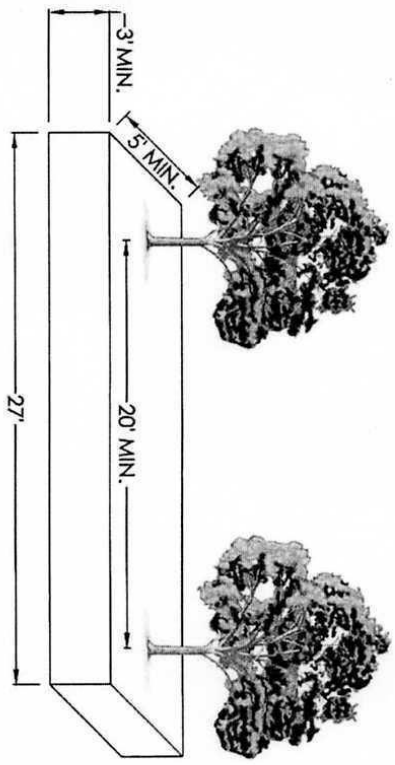


Figure 2

Soil Requirements for Trees in the Downtown

LARGE SPECIES

NEED 600 CU.FT. FOR 1-2 TREES,
990 CU.FT. FOR 3 TREES,
1380 CU.FT. FOR 4 TREES
NEED 30' BETWEEN TREES

(29' MEETS SOIL VOLUME
REQUIREMENTS BUT NEED
LONGER BED TO SPACE
TREES PROPERLY)

Exceptions to the above soil volume requirements may be made by the Director of Public Works when one, or a few trees, are being replaced in existing pits and there are no immediate plans or funds available to reconstruct the surrounding sidewalk area.

c. Trees shall be planted no closer than six feet(6') from driveways and twenty feet (20') from intersections. No trees are to be planted within six feet(6') on either side of a fire hydrant or buffalo box.

d. Trees shall normally be planted on the centerline of the parkways, unless in the opinion of the Director of Public Works, there is sufficient reason to plant the trees off-center.

e. No trees shall be planted on parkways less than four feet(4') in width unless, in the opinion of the Director of Public Works, the planting and the species of the tree approved will not endanger sidewalks, curbs and gutters, sewers, water lines or other physical property.

f. Only small-growing trees shall be planted under overhead power lines. Trees planted to the side of power lines shall be carefully selected as to crown form so as to minimize future conflicts.

5. <u>Tree Species</u>

Only the following species of trees shall be planted unless specific permission is granted otherwise by the Director of Public Works.

This list is provided as a guide to the most appropriate species for parkways in urban situations. There is no single perfect tree. It is important to match the planting site limitations with the right tree for that spot. Each site must be evaluated and possible restrictions of tree species noted. These restrictions include rooting space, soil texture, soil pH, drainage, exposure, overhead wires, and surrounding building surfaces.

The trees appearing on this listing have different requirements and tolerances. If properly sited, these species all should do well in the urban forest environment of the Village. Before selecting any particular species or variety, further research should be done to insure that the site will satisfy the specific requirements of the plant. Not all cultivars and varieties of the following tree species are suitable for parkway planting. Varieties and cultivars must be approved by the Director of Public Works.

SMALL TREES

Acer campestre **- Hedge maple[*2,3]**
Acer ginnala **- Amur Maple[*2,3]**
Acer tataricum **- Tatarian Maple[*2,3]**
Amelanchier arborea **- Shadblow Serviceberry[1,3]**
Amelanchier laevis **- Allegheny Serviceberry[1,3]**
Amelanchier x grandiflora **- Apple Serviceberry [3]**
Carpinus betulus **- European Hornbeam(columnar varieties)**
Carpinus caroliniana **- American Hornbeam [1,3]**
Cornus mas **- Cornelian Cherry Dogwood [2,3]**
Cotinus obovatus **- American Smoketree [3]**
Crataegus crus-galli var. inermis **- Thornless Cockspur Hawthorn[1,2,3]**
Crataegus punctata **- Ohio Pioneer Hawthorn[1,2,3]**
Maackia amurensis **- Amur Maackia [3]**
Malus spp**. - select Crabapple cultivars [3]**
Pyrus calleryana**[2] – (selected narrow cultivars eg. Capital, Chanticleer, Whitehouse)**
Syringa reticulata **- Japanese Tree Lilac [3]**
Tilia cordata 'Halka' **– 'Summer Sprite' Linden**

*** Limit use / over-planted genus.**
[1] Native to Illinois.
[2]Tolerant of urban conditions.
[3]Generally suitable for planting beneath power lines, depending on wire height.

MEDIUM TREES

Acer miyabei **- Miyabe Maple***
Acer platanoides 'Columnare' **- Columnar Norway Maple[*2]**
Acer truncatum x platanoides **- Shantung Maple***
Alnus glutinosa **- European Black Alder**
Betula nigra **- River Birch[1]**
Carpinus betulus **- European Hornbeam**
Cercidiphyllum japonicum **- Katsura Tree**
Cladrastis kentukea(lutea) **- Yellowwood[1]**
Corylus colurna **- Turkish Filbert[2]**
Ginkgo biloba **- Ginkgo (male only) (selected narrow cultivars eg. Princeton Sentry)**
Ostrya virginiana **- Hophornbeam[1]**
Pyrus calleryana **- Callery Pear[2] (selected narrow cultivars eg. Aristocrat, Autumn Blaze, Bradford, Redspire)**
Quercus robur **- English Oak (Columnar Cultivars)**
Tilia americana **(selected narrow cultivars eg. American Sentry)**
Tilia cordata **- Littleleaf Linden**

LARGE TREES
***Acer nigrum* - Black Maple[*1]**
***Acer platanoides* - Norway Maple[*2] (selected cultivars)**
A*cer rubrum* - Red Maple[*1]
***Acer saccharum* - Sugar Maple ***
Acer x freemani* - Freeman Maple
***Aesculus hippocastanum* - Horse Chestnut[2]**
***Aesculus x carnea* - Rubyred Horse Chestnut**
***Celtis occidentalis* - Hackberry[1,2]**
***Eucommia ulmoides* - Hardy Rubber Tree**
***Ginkgo biloba* - Ginkgo (male only) (wide cultivars eg. Autumn Gold)**
***Gleditsia triacanthos inermis*- Thornless Honeylocust[*1,2]**
***Gymnocladus dioica* - Kentucky Coffeetree[1]**
***Liriodendron tulipifera* - Tuliptree[1]**
***Magnolia acuminata* - Cucumbertree Magnolia[1]**
***Phellodendron amurense* - Amur Corktree(male cultivars)**
***Platanus x acerifolia* - London Plane[2]**
***Quercus acutissima* - Sawtooth Oak**
***Quercus alba* - White Oak[1]**
***Quercus bicolor* - Swamp White Oak[1]**
***Quercus ellipsoidalis* - Northern Pin Oak[1]**
***Quercus imbricaria* - Shingle Oak[1]**
***Quercus macrocarpa* - Bur Oak[1,2]**
***Quercus muehlenbergii* - Chinkapin Oak[1]**
***Quercus robur* - English Oak**
***Quercus rubra* - Northern Red Oak[1]**
***Quercus shumardii* - Shumard Oak[1]**
***Taxodium distichum* - Baldcypress[1]**
***Tilia americana* - American Linden[1] (straight species and wide cultivars)**
***Tilia euchlora* - Crimean Linden**
***Tilia platphyllos* - Bigleaf Linden**
***Tilia tomentosa* - Silver Linden[2]**
***Tilia x europaea* - European Linden**
***Ulmus parvifolia* - Lacebark Elm[2]**

*** Limit use / over-planted genus.**
[1] Native to Illinois.
[2]Tolerant of urban conditions.

PROHIBITED FOR PARKWAY PLANTING:	**Comments:**
SMALL TREES	
***Elaeagnus angustifolia* - Russian Olive**	**Form, Disease**
***Populus nigra 'Italica'* - Lombardy Poplar**	**Insects, Disease, Short-lived**

***Sorbus species* – Mountain Ash**	**Short-lived**

MEDIUM TREES

***Ailanthus altissima* - Tree of Heaven**	**Seeds, Suckers, Weak wood**
***Fraxinus species*--Ashes**	**Insects**
***Fraxinus velutina glabra* - Modesto Ash**	**Sidewalk Problems, Insects**
***Morus* species - Mulberry**	**Fruits, Shallow roots**

LARGE TREES

***Acer negundo* - Boxelder**	**Aggressive, Shallow roots, Weak wood**
***Acer saccharinum* - Silver Maple**	**Aggressive, Shallow roots, Weak wood**
***Fraxinus* excelsior – European Ash**	**Short-lived, Insects**
***Fraxinus species*--Ashes**	**Insects**
***Ginkgo* biloba - (Female) - Female Ginkgo**	**Fruits**
***Populus alba* - White Poplar**	**Suckers, Shallow roots, Weak wood**
***Populus deltoides* - Cottonwood**	**Weak wood, Shallow roots, Seeds**
***Salix species* - Willow**	**Weak wood, shallow roots**
***Ulmus americana* - American Elm**	**Insects, Disease**
***Ulmus pumila* - Siberian Elm**	**Weak wood, Seeds**

*** Limit use / over-planted genus.**
[1] Native to Illinois.
[2]Tolerant of urban conditions.

PRUNING

For tree pruning contracts issued by the Village, bid specifications will include minimum or maximum diameter branches to be removed. Pruning objectives will also be stated to provide a clear understanding of the results desired by the Village.

Pruning activities can be generally classified as:

- **pruning for hazard reduction**
- **routine large tree pruning**
- **horticultural training of small trees**

Types of pruning for objectives other than hazard reduction include:

- **crown cleaning**
- **crown thinning**
- **crown raising**
- **crown reduction or shaping**
- **vista pruning**
- **crown restoration**

Detailed specifications for the classes and types of pruning are contained in the Standard Practices for Tree Care Operations (ANSI A300, most current version) published by the American National Standards Institute, Inc. (Appendix 3) and the most current version of "Tree-Pruning Guidelines" published by the International Society of Arboriculture. The above mentioned standards are to be used in all pruning activities to be performed on Village trees.

TREE PROTECTION

Because of limited available space, trees frequently encounter other elements of the infrastructure such as curbs and sidewalks. On occasion, tree roots can cause damage to existing hardscape. On occasion, construction of new curbs or sidewalks or repair of existing curbs or sidewalks can cause damage to trees. It is to the benefit of the Village that solutions to tree/hardscape conflicts be devised that result in minimal damage to healthy trees while providing economically feasible alternatives to maintaining safe roads and sidewalks.

Improper excavation of soil adjacent to trees can result in severe damage to the structural roots that support the tree. Roots that are broken and splintered by power equipment such as backhoes serve as entry ports for decay producing fungi that further weaken the support of the tree. If the damage from excavation is severe, the tree is in danger of being uprooted in a wind storm.

1. Critical Root Zone

To prevent unnecessary damage to existing public trees during construction, proper tree protection guidelines must be followed, particularly in the root zone where major support roots securely hold the tree in the soil. This Critical Root Zone (CRZ) is defined as the entire ground area within the vertical projection of the crown of a tree. This is also commonly referred to as the area within the drip line of a tree.

Power equipment may not be used to excavate soil or dig trenches in the Critical Root Zone. All soil excavation done within the Critical Root Zone must be done by hand. Exceptions to the above shall be granted only with written permission from the Director of Public Works.

2. Root Pruning

A. Pre-construction root pruning

During construction activities there may be times when in the opinion of the Director of Public Works, it is not possible to entirely avoid trenching or

excavation within the Critical Root Zone. In such instances the Director of Public Works may require the permittee to perform pre-construction root pruning. This procedure results in root removal, but if done properly it will minimize damage to the tree and afford the pruned roots an opportunity to quickly regenerate. This shall be accomplished according to the following standards:

- **Roots shall be cut off cleanly by hand, or using power equipment specifically designed to cleanly cut roots (shredding or ripping damages roots and hinders regeneration).**

- **Depth of pruning shall be at least 15" but ideally 24", except that the pruning shall be no deeper that the depth of the planned excavation.**

- **Roots shall be pruned during the dormant season whenever possible.**

- **Roots shall be pruned 6" closer to the tree than the limits of excavation.**

- **Trenches shall be immediately backfilled to prevent drying out of roots.**

- **The length of the root pruning trench past the tree shall be determined using Table 1 (tunneling specifications) in this Standards Manual, and the trench shall be centered on the tree. For example, for a 20" tree the root pruning trench should be 30 feet long; it should begin 15 feet before the tree and end 15 feet past the tree.**

B. <u>Root Pruning During Construction</u>

All tree roots greater than two inches (2") in diameter that are encountered in any construction process shall be cut cleanly with an appropriate saw or pruning shear or other tool specifically designed for cutting wood. Axes or other such chopping tools shall not be used. Shovels or other tools designed for digging shall not be used.

3. <u>Tree Protection in Construction Areas</u>

It is the responsibility of the person or organization who holds a construction permit, as a condition of permit, to protect all public trees located on the adjacent public right-of-way that may reasonably be expected to be affected or damaged by construction activities. All unpaved ground on public property within the Critical Root Zones of existing trees subject to construction damage shall be protected with snow fence before any work is started. If pavement such as a sidewalk is within the Critical Root Zone, unpaved public property on both sides of the pavement shall be protected with snow fencing without blocking the right-of-way. The trees to be protected, the method of

protection, and the dimensions involved shall be determined by the Director of Public Works. Once assembled, no snow fencing or other protection device shall be removed without prior approval of the Director of Public Works, and there will be no construction activity or material including storage, stockpiling, and equipment access within the enclosure.

4. Curb Installation

The installation of new or replacement curbs requires the excavation of soil. When soil excavation occurs inside the Critical Root Zone of a tree, the following guidelines shall be used:

- **Excavation shall not disturb the soil beyond 12 inches from the back side of the curb to be installed. This allows sufficient room for a 12 inch bucket to be used on a backhoe, for a back form to be installed, and for curb installation equipment to operate.**

- **All tree roots greater than two inches (2") in diameter that are encountered in the excavation process shall be cut cleanly as described in Section 2 above .**

- **Preconstruction root pruning may be required as specified in Section 2 above.**

When appropriate, curbs in need of replacement can be installed without the use of a typical wood back form. Metal angle irons can be placed on top of the adjacent undisturbed ground and can serve as a back form. A front form may be used in those instances when conventional curb installation techniques might cause unacceptable damage to a tree's root system, and the tree is determined to be of sufficient size, quality or location value to make removal unacceptable.

The Director of Public Works and the Village Engineer shall have the authority to determine the placement and form of new curbs and the need for replacement curbs. The Village Forestry and Grounds Superintendent shall have the authority to provide advice on tree protection during curb replacement.

5. Sidewalk, Carriage Walk and Driveway Installation and Replacement

When conflicts arise between tree roots and existing pavement, it is advisable to look for solutions that minimize damage to tree roots while providing a smooth walking surface for pedestrians. Removal of large support roots should be avoided. Without adequate support from structural roots, trees become increasingly at risk of falling, particularly during heavy winds. Removal of large roots may also severely stress an otherwise healthy tree, increasing the risk of disease or pest infestation. The mitigation of uneven sidewalks in a

manner that produces additional hazards in the form of structurally unsound trees is not acceptable.

It may not always be necessary to replace a damaged sidewalk at the same grade or in the same position that the original sidewalk occupied. If possible, replacement sidewalks may be routed farther away from the root collar of the tree than the original sidewalk. While this may deviate from a straight pathway, the additional space will allow for future root growth without resulting in future pavement heaving. Occasionally, re-routing sidewalks may require obtaining an easement from the adjacent landowner.

When large roots are present at the surface, it may be possible to raise the grade in the location of the replacement sidewalk. Caution must be used to add a ramp of soil along the edges of the replacement sidewalk that slopes to the grade of adjacent turf. This will prevent tripping on or falling off of the new sidewalk that is at a higher grade than the original pavement.

Smaller panels of concrete with expansion joints might also be an alternative. It may be possible to narrow the width of the sidewalk pavement in the area of the root crown. Pavement only needs to be of sufficient width to accommodate two wheelchairs side by side.

Whenever possible, installation of new driveways and carriage walks or widening of existing driveways should not be performed within a tree's Critical Root Zone. If in the opinion of the Public Works Director that is not feasible, the pavement should be installed no closer to the tree than the minimum distances shown on table 1 (tunneling specifications) in part 7 below, for trees 10" in diameter and over. For example, the pavement should be no closer than 15 feet from the center of a 20" tree. Distances less than those shown on the table will be permitted only with written permission of the Director of Public Works. To prevent future damage to the pavement by the tree, in no case shall the minimum distance between a tree and the new pavement be less than 6'.

Whenever possible, replacement or installation of pavement that requires cutting of tree roots should be conducted in early spring and concluded by mid summer to allow maximum root recovery before dormancy.

6. <u>Changes to Existing Grade</u>

No changes to original grade should be allowed inside the Critical Root Zone. If such changes are unavoidable, consideration should be given to installation of retaining walls on cuts or wells in fills. This will minimize root cutting and keep the base of the trunk at the original ground level.

7. Installation or Repair of Underground Cables & Pipes

All underground installations or repairs of utility or communication cables or pipes including sprinkler or irrigation systems upon the public right-of-way are subject to approval by the Village. Any and all installations or repairs that may affect public trees due to underground conflicts (roots) are specifically subject to the review and approval of the Director of Public Works before the project starts.

Trenching and Tunneling - Where there is insufficient space for trenching to bypass the Critical Root Zone of trees, tunneling must be used in place of trenching. In no case shall the top of the tunnel be less than two feet in depth. When the tunneling procedure is required, the distance of the tunnel from the center of the tree is determined by the diameter of the tree 4-1/2 feet from the ground line (DBH). Unless otherwise specified, all dimensions apply as listed in Table 1.

Tree Diameter (DBH)	Distance of tunnel from center of tree trunk
Less than 3”	1 foot
3” to 4”	2 feet
5” to 9”	5 feet
10” to 14”	10 feet
15” to 19”	12 feet
greater than 19”	15 feet

It is recognized that there may be situations where utilities must be installed or repaired within a tree’s Critical Root Zone, and trenchless excavation is not possible. Examples could include exceptionally rocky conditions, or cases where a pit must be excavated within the CRZ to receive tunneling equipment. The Director of Public Works shall have the authority to determine whether trenchless excavation is impossible, in which case permission to proceed may be granted under the following conditions:

- **The Director of Public Works will determine the location and size of the pit or trench.**
- **Pre-construction root pruning may be required as in Section 2 above.**
- **Any roots encountered during construction must be cleanly cut as described in Section 2 above.**
- **All trenches/excavations shall be backfilled as soon as possible to prevent roots from drying out.**

Additional information on trenching and tunneling near trees is contained in Appendix 4.

REMOVAL POLICY

As stated in the Urban Forest Protection and Planning Ordinance, the primary objective of the Village is to provide citizens with a safe, prosperous and healthy community. Healthy trees are an important component of the Village, and contribute significantly to the quality of the local environment. Diseased or structurally unsound trees can be a liability. It is the policy of the Village to maintain public trees as long as they remain assets to the community, and to remove public trees when they become a liability.

There are many factors that contribute to transforming a tree from an asset to a liability. Since trees are living organisms, they eventually die, therefore age can be a factor that produces a liability. Disease, decay, and mechanical damage can also cause a tree to be structurally unsound, and therefore a liability. The location of a tree may also cause it to be a liability in the form of interfering with traffic visibility.

There are other factors that occasionally cause a tree to be an inconvenience, but not necessarily a liability. Deciduous trees drop leaves each fall which may cause an inconvenience without causing a liability. The decision to remove a publicly maintained tree frequently is influenced by a number of considerations. It is the policy of the Village to base tree removals on criteria of safety (and therefore liability) and consider criteria of inconvenience to a lesser extent.

The decision to remove or not to remove a tree will be based on consideration of several criteria including:

- **The tree species and its desirability for parkway use.**
- **The size and appearance of the tree, and the contribution it is making towards our goal of tree-lined streets.**
- **The potential for the tree to damage hardscape features such as driveways, sidewalks, buffalo boxes, etc.**
- **The number of other trees growing under the same conditions, and the precedent that would be set by removing the tree in question.**
- **The degree of hardship and/or safety hazards the tree is causing.**
- **The feasibility of alternate measures which may alleviate the hardship/hazard.**
- **Suitability of the tree for its present location.**
- **Expected long-term maintenance costs for the tree compared to other trees of same age/size.**

A final decision on a tree removal request will always try to balance the needs of the individual property owner and of the Village and its citizens in general. The following section lists a limited number of reasons for tree removals that have been submitted to the Village for approval. This is not an exhaustive list, however it is provided as a practical guide to citizens who are considering submitting a tree removal request.

A. <u>Conditions Which Automatically Warrant Removal at Village Cost; No Replacement is Required (Except as Noted)</u>

1. **Tree is dead.**

2. **In the opinion of the Public Works Director or authorized representative, there is a clear and reasonable risk of failure which could cause injury or property damage, and corrective measures are not feasible.**

3. **Contagious and fatal disease or insect infestation (e.g. Dutch Elm Disease, Pine Wilt or Emerald Ash Borer).**

4. **Tree damaged beyond repair (e.g. construction injury, lightning, vandalism, auto accidents).**

5. **Extremely poor shape due to dieback or storm damage, (e.g. 50% or more of crown missing and unlikely to regenerate within 5 years).**

6. **Unsuitable species and/or form in parkway adjacent to an area being newly developed (note - in these situations developer is required to pay for new 2 1/2" trees at 40 foot spacing).**

7. **Tree is in the way of Village-authorized construction project designed to benefit the community in general; rerouting of construction or alternative tree protection measures are not feasible (e.g. road widening, main break repair).**

8. **Tree is almost totally obstructing growth of an adjacent tree specimen that is clearly superior (based on species, condition and location).**

9. **Tree was recently planted and does not meet code requirements due to species, spacing or location.**

10. **Tree is causing serious sight obstruction which cannot be alleviated by pruning.**

11. Tree trunk is growing into and damaging a fence (along rear lot lines), buffalo box, utility pole, or fire hydrant.

12. Large-growing species under power lines cannot be pruned for adequate clearance without severely compromising the tree's appearance or long-term survival.

13. Female gingko tree bears odiferous fruit.

14. A serious chronic condition exists which will definitely result in tree death long before its normal lifespan (e.g. entire trunk is completely encircled with girdling roots).

15. Tree trunk (not just roots) has grown into and is lifting a driveway apron or sidewalk creating a hazard condition. Procedures being undertaken to alleviate the hazard will kill the tree and alternate measures for alleviating the hazard are not possible.

16. Tree produces large, dangerous thorns.

B. Conditions Which By Themselves, Do Not Warrant Tree Removal

The following lists some of the many reasons citizens have given for requests to remove trees. Each reason is followed by one or more examples of trees which may be involved, as well as Forestry Division rationale for denying such requests in the past.

1. Reason: Chronic tendency of species to drop bark, somewhat messy fruit, small twigs.
Example: Sycamores, some older varieties of Crabapples, Siberian Elms, some Honeylocusts, Willows.
Rationale: Inconvenience only.

2. Reason: Dripping sap or "honeydew" from insects.
Example: Cottony Maple Scale on Silver Maple.
Rationale: Natural and temporary condition; will eventually wash off in most cases.

3. Reason: Too many leaves to rake.
Example: Any deciduous tree.
Rationale: Inconvenience only.

4. Reason: Insects (which in the opinion of the Public Works Director or authorizedrepresentative are not significantly damaging tree).

Example: Hackberry Nipple Gall, Aphids, Carpenter Ants
Rationale: Aesthetics only (In the case of Carpenter Ants we will treat with insecticide).

5. **Reason:** Homeowner fears tree will fail (but the Public Works Director or authorized representative doesn't agree there is a reasonable risk).
Example: Large tree near home.
Rationale: Although no one can guarantee any particular tree could never fail given the right conditions, we perform a thorough risk evaluation using an ISA formula, then cable, and/or prune the tree where feasible (The tree is removed if extensive defects are found which cannot be corrected economically).

6. **Reason:** Birds nest in tree, causing droppings and noise
Example: Any tree; any birds but especially crows
Rationale: Inconvenience only.

7. **Reason:** Homeowner blames tree for private sewer backups.
Example: Any tree near a faulty sewer pipe, but especially fast-growing species like Silver Maple and Willows.
Rationale: Roots do not invade sound sewer systems, but many older services have settled and allowed open joints which roots can enter. Sewer services should be periodically maintained with root pruning and/or chemical treatment. If that fails, sewers should be repaired using modern installation techniques which do not allow root invasion. Also, because tree roots commonly grow outward 2 - 3 times the height of the tree, most locations have roots from many trees, public and private, growing near the faulty sewer. Therefore removal of just the closest tree is unlikely to solve the problem.

8. **Reason:** Tree has a few surface roots.
Example: Many Silver Maples, and some other species, especially those growing in heavy clay soil or areas with high water tables.
Rationale: A few minor roots can sometimes be removed, or the above-ground portion shaved off, without significant tree injury. Occasionally, we can add 1 - 2" of topsoil over the roots. Ground cover or mulch can also be installed by the homeowner to eliminate the need for mowing.

9. **Reason:** Grass is thin beneath tree due to shade.
Example: Norway Maples
Rationale: Healthy trees are a greater asset to the community than grass, and much more difficult and costly to replace. We will thin the crowns of overly dense trees to aid in turf growth, but it may not entirely correct the problem. Shade-tolerant ground covers are also an alternative.

10. **Reason:** **Species or cultivar is considered undesirable in general.**
Example: **Willow, Boxelder, Silver Maples, etc.**
Rationale: **Healthy, sound specimens of the above species growing in adequate planting sites are not removed even though a long-term goal of the Forestry Program would be to eliminate these species. This is due to the sheer number of these species present and the devastation that would result if they were all removed.**

11. **Reason:** **Homeowner doesn't like the appearance or location of tree.**
Example: **Tree not centered on picture window, or fall leaves not colorful enough, or shape is somewhat imperfect.**
Rationale: **Aesthetics only.**

12. **Reason:** **Sidewalk or driveway apron is lifted by roots; repair measures are available which will not seriously impact tree.**
Example: **Silver Maples and Elms, especially in older neighborhoods, growing at least 6' from aprons and walks.**
Rationale: **Repairs should be made to the sidewalks or aprons. Usually selected roots can be removed at that time that will not seriously impair the tree, and the distance between tree and pavement is far enough that the problem hopefully will not reoccur in the near future.**

13. **Reason:** **Tree is partially impeding the growth of a private tree, or overhanging house or yard.**
Example: **Many trees, especially on corner lots where parkway is near home.**
Rationale: **We can prune to alleviate most of these problems (However we will not prune so severely that the health, appearance or longevity of the parkway tree is seriously impacted).**

C. **Conditions Where Removal May or May Not Be Warranted**

Note: The following are examples of conditions where removal requests may or may not be granted. Following the examples there is a list of circumstances which may influence the decision to remove trees in this category, and conditions which may be imposed.

1. **Reason:** **Repeated branch failures of the tree over a period of time (but not just normal twig dropping common to certain species).**
Example: **A Siberian Elm that has lost fairly large limbs each year for the last several years.**

2. **Reason:** **Very large and/or very extensive surface roots create a tripping or mowing hazard, and removal of roots will seriously threaten the health or stability of the tree.**
Example: **Some Silver Maples**

3. **Reason:** **Extremely abundant, messy, staining fruit is produced.**
Example: **Mulberry trees (but not crabapples).**

4. **Reason:** **Species is subject to chronic, severe disease symptoms that frequently disfigure tree.**
Example: Some older varieties of Crabapple are frequently disfigured by Apple Scab (not just in years with cool, wet Springs).

5. **Reason:** **Tree is sending forth extensive sprouts from root system into lawn.**
Example: **Many Silver Poplars, some Honeylocusts.**

6. **Reason:** **Proximity of tree to a driveway may cause a safety problem when backing out.**
Example: **Trees, especially in older sections of town, where driveways were installed too close to established trees.**

7. **Reason:** **No driveway exists, or the existing driveway is not wide enough for one car; installation or widening is planned which would require significant root loss rendering the tree unsafe; and no other options are available to relocate planned improvement.**
Example: **Vacant lots, or homeowners who want to attach or detach a garage, or older homes with narrow drives.**

8. **Reason:** **Homeowner will be paying for permanent sewer/water service repairs (not just rodding), which will require extensive root removal that will threaten stability of tree; alternate measures are not possible.**
Example: **An existing tree sits directly above the connection between a service that is being replaced, and the main sewer.**

The following lists factors which will be considered, and conditions that may be imposed, in decisions regarding removal of trees in this Section "C".

1. **The existence of many of the following conditions, which do not by themselves warrant removal but may influence the decision when weighed together: Conditions #1, 8, 10, 12, and 13 listed in part "B" of this Removal Policy.**

2. **The presentation to the Forestry Division of a petition, signed by all property owners within 250 feet of the proposed removal, stating there are no objections to the proposed removal.**

3. **Applicant's willingness to pay, in advance, some or all of the costs involved. These may include:**

    a. **The resident's share of a 2 1/2" tree on the cost-share program ($100.00).**

    b. **The full, planted cost of a 2 1/2" tree.**

    c. **The full, planted cost of one or more larger trees (in some cases inch for inch replacement may be required - e.g. a 12"removal will require three new 4" trees or two new 6" trees).**

    d. **The full cost of transplanting the tree elsewhere.**

    e. **The full cost of tree and/or stump removal, to be performed by either the Village or a properly insured tree care company.**

4. **The number of trees growing in the neighborhood and/or the Village that exhibit the specific conditions cited (and thus, the likelihood of setting a precedent which will result in widespread tree removal).**

APPENDICES

Appendix 1: Safety Requirements for Tree Care Operations, the American National Standards Institute, Inc. ANSI Z133.1, most current version

Appendix 2: American Standard for Nursery Stock, ANSI Z601, most current version

Appendix 3: Standard Practices for Tree Care Operations, the American National Standards Institute ANSI A300, most current version

Appendix 4: Trenching and Tunneling Near Trees: A Field Pocket Guide for Qualified Utility Workers, by The National Arbor Day Foundation

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