

City of Kirkwood Tree Manual

The **Kirkwood Tree Manual** shall contain the technical information necessary to perform work on trees as regulated in the “Tree Code of the City of Kirkwood, Missouri”. This manual is divided into four sections:

- I. **Pruning of Trees**
 - a. **Standards**
 - b. **Pruning Categories**
 - c. **Prohibited Practices**
- II. **Tree Protection**
 - a. **Trees to be Protected**
 - b. **Standards of Practice**
- III. **Planting of Trees**
 - a. **Specifications**
 - b. **Approved Street Tree Planting Guide**
- IV. **Prohibited Species**

These sections are to outline the specific practices that must be followed when working with trees as outlined in the City Code. These sections are to be modified by the Urban Forester as the urban forest of the City changes, industry standards are updated, and/or invasive pests or species pose a threat to the established management practices.

Section 1 Pruning of Trees

Pruning of trees as regulated by the City Code shall be performed following the standards and applications as outlined in this section. These practices will not be enforced upon those performing work on private property outside of the regulation set-forth by the City Code, but they may serve as an approved reference.

A. PRUNING STANDARDS

Outlined in this section are specific standards of practice that must be adhered to when pruning trees as regulated by the City Code.

All pruning shall adhere as a minimum practice to *ANSI A300 Part 1: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning)* as disturbed by the American National Standards Institute.

As general guidelines the following must be followed while performing City approved maintenance on City trees.

1. All tree work is to be performed by an International Society of Arboriculture (ISA) Certified Arborist, Municipal Specialist, Board Certified Master Arborist, or Tree Care Industry Council (TCIA) Accredited Certified Tree Care Specialist.
2. All pruning tools must be kept adequately sharp to insure smooth cuts.
3. All tools used on the pruning or removal of trees shall be properly disinfected prior to use on any other tree or plants. Tools shall also be disinfected between pruning infected and unaffected areas in the same tree. Disinfecting can be accomplished by wiping the tools with isopropyl alcohol or 10% bleach to water solution.
4. No spurs, climbing irons, or spike shoes shall be permitted for use on trees, unless the tree is to be removed.
5. Do not prune if boring insects are flying (they are attracted to fresh wounds). Do not prune Oak trees between April 1 and August 30 unless for imminent danger or other safety concerns.
6. All wood pruned/removed from the tree(s) shall be cleaned up and chipped or hauled off the City of Kirkwood's right-of-way daily. Each jobsite shall be left in "better than arrival" condition. Any holes created in turf area must be repaired by contractor.
7. Absolutely NO TOPPING will be permitted. Branches must be cut back using "Rule of 1/3".

B. **PRUNING CATEGORIES**

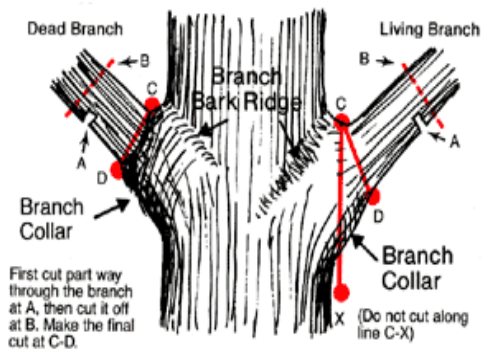
Approved pruning categories have been established for pruning trees found within City Properties, rights of way, and other city maintained areas. The following categories are outlined for use by private residents, City employees, or City contractors working on behalf of Kirkwood.

1. **Light or Safety Prune** shall consist of the minimum pruning necessary to correct extreme or undesirable conditions that may be hazardous to persons or property.
 - i. Remove all dead and dying branches greater than 3 inches in diameter
 - ii. Remove all broken or loose branches lodged in the trees
 - iii. Remove all lower limbs that constitute a threat to persons or property, including those that fall within the City clearance standards. (The City discourages removing lower limbs to the point that the trunk exceeds one-third of the height of the tree.)
2. **Medium Prune** may include any or all of the specifications for Minimum pruning, in addition to the following:
 - i. Removal of all dead and dying branches
 - ii. Remove all dead or live branch stubs from previously broken or poorly cut branches
 - iii. Remove any live branches that interfere with the tree's structural strength and healthy development. These are to include:
 - a. Crossed or rubbing branches
 - b. Multiple leaders in a single leader type tree
 - c. Undesirable sucker and sprout growth
 - d. Diseased or infested limbs
 - e. Excessively heavy branch ends
 - f. Multiple branches near the end of broken or stubbed limbs
3. **Heavy Prune** may include any or all of the specification for Medium pruning, in addition to the following:
 - i. Inspection for health conditions
 - ii. Crown thinning
 - iii. Crown shaping
 - iv. Crown restoration
 - v. Up to 20% of the canopy may be removed

All Pruning shall be performed by using the "*Three Cut Method*". This method is the removal of a limb using a 3-cut process to protect the branch collar. The first two cuts remove the weight of the branch. This prevents the bark from ripped away from the trunk at and below the branch collar.

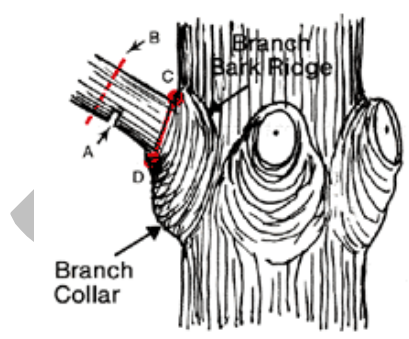
1. The **first cut** (marked A in figures below) is an undercut about

- 1/4 through the branch made upward from the bottom of the branch about one or two inches farther out than the collar.
- The **second cut** (marked B in figures below) is a downward cut just outside the undercut that actually removes the entire branch, eliminating the weight of the branch before making the final natural target cut.
 - The **third cut** (marked C-D in figures below) is the natural target cut. The remaining portion of stub is removed with a cut made just outside of the branch collar tissue



Hardwoods

Figure 2: Pruning Hardwoods to Protect Branch Collars.



Conifers

Figure 1: Pruning Conifers to Protect Branch Collars.

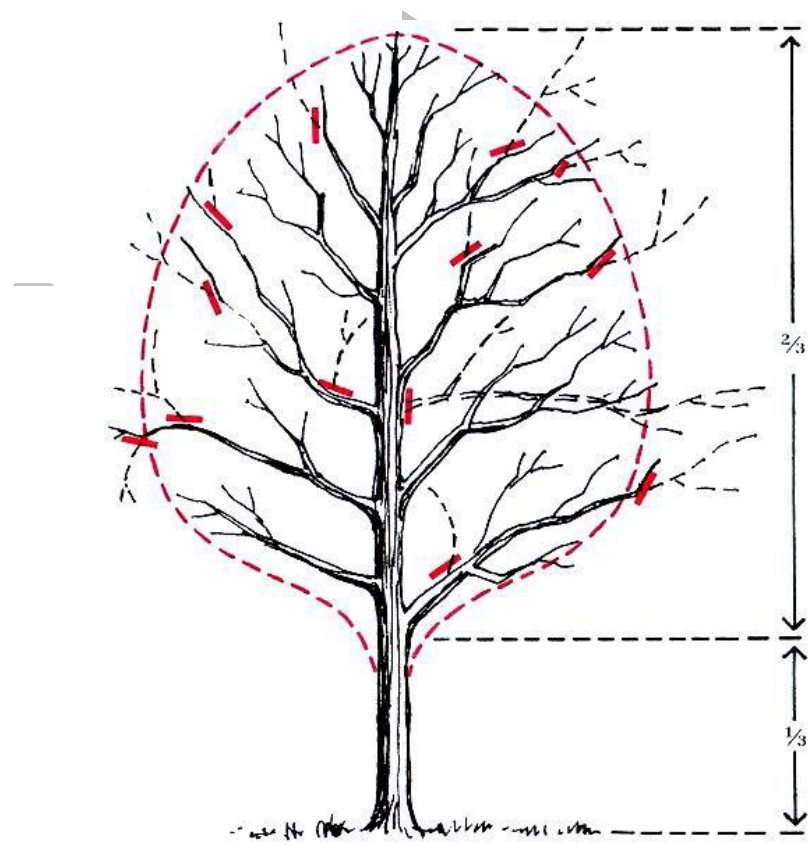


Figure 3: Pruning Practices for Structure, Shape, and Canopy reduction. The trunk shall be no more than one-third the tree height.

C. **PROHIBITED PRACTICES**

1. ***TOPPING*** or ***CROWN REDUCTION***

All pruning shall be completed with the “rule of 1/3”. The reduction of the crown by “topping” branches will not be permitted. The pruning of limbs shall be performed by pruning back to a lateral no less than 1/3 of the diameter of limb being pruned. Heading cuts will not be permitted.

Section 2 Tree Protection

The protection of trees during construction, excavation, demolition, and property improvement as regulated by the City Code shall be performed following the standards and applications as outlined in this section. These practices will be enforced upon all those performing work on projects that are regulated by the City Code.

A. **Tree Protection Zone**

1. The Tree Protection Zone (TPZ) is a restricted use area around the base of the tree at a minimum of 10 feet from the exterior of the trunk. The TPZ shall be enclosed with proper fencing.

Within this zone there shall be no:

- i. Excavation
 - ii. Storage of spoils
 - iii. Storage of equipment
 - iv. Parking
 - v. Operations of any equipment
 - vi. Grading
 - vii. Or disturbance of any kind.
2. Tree protection fencing shall enclose the entire area of the TPZ of the tree(s) to be protected throughout the duration of the project. (Appendix A)
 - i. In parking areas where fencing is to be located on paving or concrete that will not be removed, posts may be supported by an appropriate grade-level concrete base, upon approval by the Urban Forester.
 - ii. Trees within a planting strip or *tree lawn* near sidewalks, streets, driveways or other public rights-of-way; only the planting strip and yard side of the TPZ shall be enclosed with the required protective fencing in order to keep sidewalks and streets open for public use.
 - iii. The Tree Protection Zone shall be constructed of:
 - (1) Three (3) foot high green mesh fencing. Fencing shall be affixed to five (5) foot long heavy duty steel, green painted T- posts driven into the ground to a depth of

a minimum of one (1) foot six (6) inches (18 inches minimum). Posts should be spaced no more than (eight) 8 feet apart.

- iv. A *Tree Protection Zone* warning sign shall be affixed to tree protection fencing and prominently displayed at 20-foot intervals to be visible from all directions. All signs shall be a minimum of 8.5 inches by 11 inches, weatherproof with no holes through the paper signage, and clearly state: "*WARNING*
– *TREE PROTECTION ZONE*". See Appendix B

Section 3 Planting of Trees

Planting of trees as regulated by the City Code shall be performed following the standards and applications as outlined in this section. These practices will not be enforced upon those performing work on private property outside of the regulations set-forth by the City Code, but they may serve as an approved reference.

A. PLANTING SPECIFICATIONS

Outlined in this section are specific standards of practice that must be adhered to when planting trees as regulated by the City Code.

All planting shall adhere as a minimum practice to ANSI A300 Part 6: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Transplanting) as distributed by the American National Standards Institute and highlighted as Best Management Practices by the International Society of Arboriculture.

The following specifications shall be followed by all individuals, groups, contractors, and agencies performing the actions of planting trees within the City of Kirkwood Street Right of Way. Planting within the Right of Way shall be determined by the Urban Forester as detailed in the City Code.

1. Tree Grow Space:

- i. *Tree Lawn Size <3ft* – No trees will be planted
- ii. *Tree Lawn Size 3-4ft* – Small Growth trees only
- iii. *Tree Lawn Size 4-6ft* – Medium Growth trees only
- iv. *Tree Lawn Size >6ft* – Large Growth Trees

2. Overhead Utility Lines:

Only small trees with a maximum height of 35 feet will be allowed

3. Signs:

- i. *Stop signs* – Trees will be planted no less than 35 feet from the rear of a stop sign
- ii. *Miscellaneous Signs* – Trees will be planted a minimum of 15 feet from the rear of these signs

4. Driveways/Hardscape:

Trees will be planted a minimum of 8 feet from driveways and other sidewalk approaches outside of intersections.

5. Intersections without stop signs:

Trees will be planted a minimum of 35 feet from the corner of an intersection

6. Fire hydrants/utility poles:

Trees will be planted a minimum of 10 feet from these hardscapes

7. Tree Spacing for Mature Tree Size

- i. Large growth trees shall have a minimum spacing of 35 feet from center
- ii. Medium growth trees shall have a minimum spacing of 25 feet from center
- iii. Small growth trees shall have a minimum spacing of 15 feet from center

In addition to the Specifications listed above the following general guidelines shall be followed when installing trees as regulated by the City Code.

1. Prior to digging, all utilities shall be located and marked in accordance with all Federal, State, and local law.
2. No trees other than those listed in the *Approved Street Tree Planting Guide* shall be planted.
3. All newly installed public trees must meet the American Standard for Nursery Stock. The trees must be free from disease, insects, and any other disfigurements.
4. All trees must be planted following the International Society of Arboriculture's *Best Management Practices – Tree Planting*.
5. Any planting holes drilled with an auger must have the sides of the holes "roughened" with a shovel to reduce compaction and the effects of "glazed wall"
6. When planting trees, all non-biodegradable material shall be removed from the tree. This includes but is not limited to:
 - i. All rope and twine wrapped around the ball and/or trunk
 - ii. The top 1/3 of burlap shall be cut and removed from the root ball
 - iii. The top 1/3 of any wire baskets shall be cut and removed from the root ball

B. Recommended Tree Planting Guide

Large Trees: Greater than 45 Feet in Height at Maturity	
Scientific Name	Common Name
<i>Acer x freemanii</i>	Freeman Maple
<i>Acer saccharum</i>	sugar maple
<i>Acer nigrum</i>	black maple
<i>Betula platyphylla</i>	white birch
<i>Betula nigra</i>	river birch
<i>Celtis laevigata</i>	sugarberry
<i>Celtis occidentalis</i>	common hackberry
<i>Cercidiphyllum japonicum</i>	katsuratree
<i>Diospyros virginiana</i>	common persimmon
<i>Ginkgo biloba</i>	ginkgo
<i>Gleditsia triacanthos inermis</i>	thornless honeylocust
<i>Gymnocladus dioica</i>	Kentucky coffeetree
<i>Larix decidua</i>	European larch
<i>Liriodendron tulipifera</i>	tuliptree
<i>Magnolia acuminata</i>	cucumbertree magnolia
<i>Magnolia Grandiflora</i>	Brackens Brown
<i>Magnolia macrophylla</i>	bigleaf magnolia
<i>Metasequoia glyptostroboides</i>	dawn redwood
<i>Nyssa sylvatica</i>	blackgum
<i>Maclura pomifera</i> "whtieshield"	Osage Orange White Shield
<i>Quercus alba</i>	white oak
<i>Quercus bicolor</i>	swamp white oak
<i>Quercus coccinea</i>	scarlet oak
<i>Quercus lyrata</i>	overcup oak
<i>Quercus macrocarpa</i>	bur oak
<i>Quercus montana</i>	chestnut oak
<i>Quercus muehlenbergii</i>	chinkapin oak
<i>Quercus imbricaria</i>	shingle oak
<i>Quercus phellos</i>	willow oak
<i>Quercus robur</i>	English oak

Large Trees: Greater than 45 Feet in Height at Maturity (cont.)

Scientific Name	Common Name
<i>Quercus rubra</i>	northern red oak
<i>Quercus shumardii</i>	Shumard oak
<i>Styphnolobium japonicum</i>	Japanese pagodatree
<i>Taxodium distichum</i>	common baldcypress
<i>Tilia americana</i>	American linden
<i>Tilia cordata</i>	littleleaf linden
<i>Tilia tomentosa</i>	silver linden
<i>Ulmus parvifolia</i>	Chinese elm
<i>Zelkova serrata</i>	Japanese zelkova

Medium Trees: 31 to 45 Feet in Height at Maturity

Scientific Name	Common Name
<i>Acer griseum</i>	paperbark maple
<i>Acer truncatum</i>	Shangtung maple
<i>Aesculus x carnea</i>	red horsechestnut
<i>Alnus cordata</i>	Italian alder
<i>Asimina triloba</i>	pawpaw
<i>Carpinus betulus</i>	European hornbeam
<i>Carpinus caroliniana</i>	American hornbeam
<i>Cladrastis kentukea</i>	American yellowwood
<i>Corylus colurna</i>	Turkish filbert
<i>Eucommia ulmoides</i>	hardy rubber tree
<i>Ostrya virginiana</i>	American hophornbeam
<i>Parrotia persica</i>	Persian parrotia
<i>Phellodendron amurense</i>	Amur corktree
<i>Pistacia chinensis</i>	Chinese pistache
<i>Prunus maackii</i>	Amur chokecherry
<i>Prunus sargentii</i>	Sargent cherry
<i>Prunus x yedoensis</i>	yoshino cherry
<i>Pterocarya fraxinifolia</i>	Caucasian wingnut
<i>Sassafras albidum</i>	sassafras

Small Trees: 15 to 30 Feet in Height at Maturity

Scientific Name	Common Name
<i>Acer buergerianum</i>	trident maple
<i>Acer campestre</i>	hedge maple
<i>Acer ginnala</i>	Amur maple
<i>Acer griseum</i>	paperbark maple
<i>Aesculus pavia</i>	red buckeye
<i>Amelanchier arborea</i>	downy serviceberry
<i>Amelanchier laevis</i>	Allegheny serviceberry
<i>Carpinus caroliniana</i>	American hornbeam
<i>Cercis canadensis</i>	eastern redbud
<i>Chionanthus virginicus</i>	white fringetree
<i>Cornus alternifolia</i>	pagoda dogwood
<i>Cornus kousa</i>	kousa dogwood
<i>Cornus mas</i>	corneliancherry dogwood
<i>Corylus avellana</i>	European filbert
<i>Cotinus coggygria</i>	common smoketree
<i>Cotinus obovata</i>	American smoketree
<i>Crataegus phaenopyrum</i>	Washington hawthorn
<i>Crataegus viridis</i>	green hawthorn
<i>Franklinia alatamaha</i>	Franklinia
<i>Halesia tetraptera</i>	Carolina silverbell
<i>Laburnum x watereri</i>	goldenchain tree
<i>Maackia amurensis</i>	Amur maackia
<i>Magnolia x soulangiana</i>	saucer magnolia
<i>Magnolia stellata</i>	star magnolia
<i>Magnolia tripetala</i>	umbrella magnolia
<i>Magnolia virginiana</i>	sweetbay magnolia
<i>Oxydendrum arboreum</i>	sourwood
<i>Prunus subhirtella</i>	Higan cherry
<i>Prunus virginiana</i>	common chokecherry
<i>Staphylea trifolia</i>	American bladdernut
<i>Stewartia ovata</i>	mountain stewartia
<i>Styrax japonicus</i>	Japanese snowbell
<i>Syringa reticulata</i>	Japanese tree lilac

Coniferous and Evergreen Trees
(Not recommended for Street Right of Way)

Large Trees: Greater than 45 Feet in Height at Maturity

Scientific Name	Common Name
<i>Abies balsamea</i>	balsam fir
<i>Abies concolor</i>	white fir
<i>Chamaecyparis nootkatensis</i>	Nootka falsecypress
<i>Cryptomeria japonica</i>	Japanese cryptomeria
× <i>Cupressocyparis leylandii</i>	Leyland cypress
<i>Ilex opaca</i>	American holly
<i>Picea omorika</i>	Serbian spruce
<i>Picea orientalis</i>	Oriental spruce
<i>Pinus densiflora</i>	Japanese red pine
<i>Pinus echinata</i>	shortleaf pine
<i>Pinus strobus</i>	eastern white pine
<i>Pinus sylvestris</i>	Scotch pine
<i>Pinus taeda</i>	loblolly pine
<i>Pinus virginiana</i>	Virginia pine
<i>Pseudotsuga menziesii</i>	Douglas-fir
<i>Thuja plicata</i>	western arborvitae
<i>Tsuga canadensis</i>	eastern hemlock

Medium Trees: 31 to 45 Feet in Height at Maturity

Scientific Name	Common Name
<i>Chamaecyparis thyoides</i>	Atlantic whitecedar
<i>Juniperus virginiana</i>	eastern redcedar
<i>Pinus bungeana</i>	lacebark pine
<i>Pinus flexilis</i>	limber pine
<i>Pinus parviflora</i>	Japanese white pine
<i>Thuja occidentalis</i>	eastern arborvitae

Small Trees: 15 to 30 Feet in Height at Maturity

Scientific Name	Common Name
<i>Ilex × attenuata</i>	Foster's holly
<i>Pinus aristata</i>	bristlecone pine
<i>Pinus mugo mugo</i>	mugo pine

Section 4 Prohibited

Species

Trees within the public right of way are an asset to the City of Kirkwood and must be maintained as healthy non-hazardous trees. To promote the overall health and well-being of the urban forest, the species listed in this section are prohibited to be planted within the City maintained rights of ways and may be removed at any time by the discretion of the City.

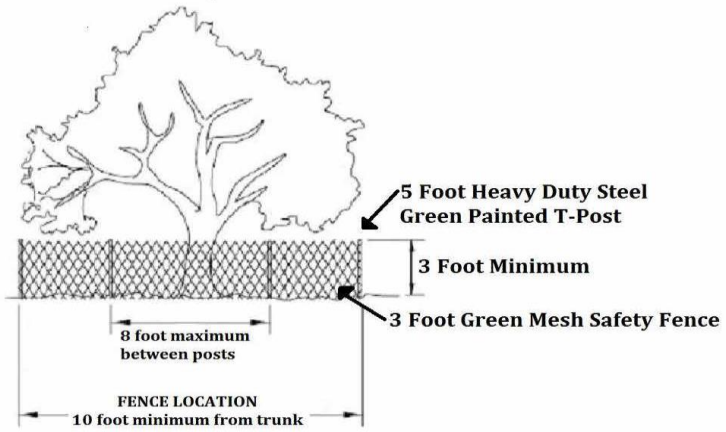
1. Tree of Heaven (*Ailanthus altissima*)
2. Callery Pear (*Pyrus calleryana*) and all varieties including Bradford pear
3. Ash species (*Fraxinus*) to include all native species to North America
4. Sweetgum (*Liquidambar styraciflua*)
5. Silver maple (*Acer saccharinum*)
6. Crabapple species (*Malus*)
7. Siberian elm (*Ulmus pumila*)
8. Any and all species listed as a Missouri Noxious Weed by the Missouri Department of Agriculture or a species listed as *invasive* by the Missouri Department of Conservation.

Appendix A: Tree Protection Fencing

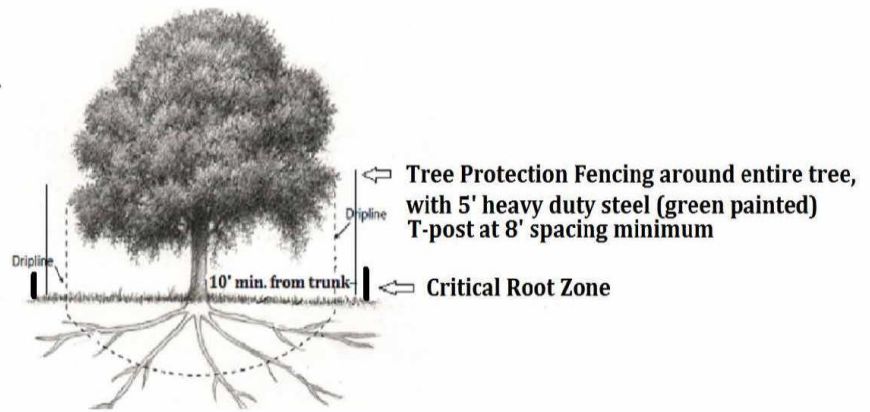
TREE PROTECTION FENCING

Revised August 2018

NOTE: 8.5" x 11" Warning signs are required on fencing a minimum of 20' intervals, with a minimum of one sign on each elevation of fence. Sign shall be moisture protected as in Exhibit A-S.



Distance from trunk shall be as shown in tree study or 10' minimum.



Appendix B: Warning Tree Protection Zone Sign

