Urban Tree Selection Manual

A Guide for Selecting Trees for the Urban Environment

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John Alexopoulos, *Associate Professor*
Landscape Architecture
University of Connecticut

Paula Stahl, *Assistant Extension Educator*
University of Connecticut Cooperative Extension System
*Land Use Educato*r, Green Valley Institute

Robert M. Ricard, *Senior Extension Educator*
Urban Natural Resources and Public Management
University of Connecticut Cooperative Extension System

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University of Connecticut Department of Plant Science
Glenn D. Dreyer, Arboretum Director and Adjunct Associate Professor of Botany at Connecticut College, New London, CT
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The authors are solely responsible for the opinions and accuracy of information offered in this manual.

Unless otherwise noted, all photographs and drawings are the authors.

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Greening Connecticut Cities and Towns, and
The Value of Trees in Connecticut's Urban Forest.

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Foreward

Planting trees in the most developed portions of our cities is not particularly difficult. We see it done all the time. The hard part is getting them to live past the first few years. If we really want trees in some of the most difficult locations, like tiny pits in sidewalks surrounded by pavement, utility wires and tall buildings, then we need to be realistic and think of them as short-lived perennials that need to be replaced every five or ten years. And the municipality needs to budget accordingly. Or we can choose to put our resources into selecting the most adaptable and appropriate kind of tree, and into reengineering the sites, when such opportunities arise, so trees can actually survive over the long term. This booklet provides some excellent advice on both tree selection and site limitations.

The approach taken in this publication sets it apart from many other works which simply give information about what trees look like and how they grow. Here, the authors emphasize site analysis, and provide a series of commonly occurring scenarios for street trees (Selection by Situation, Section 4). The different types of sites are linked with groups of trees that will do best given the limitations that each type of location imposes upon tree growth. Pertinent information about each tree is then highlighted in the next section.

This book will prove very valuable to those who actually have to make the choices of what trees to put where, particularly along the more built-up roadsides and parking lots in our Connecticut cities and towns. Tree Wardens, public works supervisors and landscape architects come to mind. Conservation and Planning and Zoning Commissions may wish to use this information for guidance when evaluating site plans that include (or should include) plantings.

We need more living, healthy, well-formed trees in our urban areas, and this book can help that happen. Be sure the people who are responsible for the trees in your town have a copy.

Glenn Dreyer,
Becker Director, Connecticut College Arboretum
New London

INTRODUCTION 1

The Urban Forest

We tend to take trees for granted, perhaps because they are everywhere around us. We see them along our rural roads, streets and highways, in woods and yards. They seem to grow and do well without our help. But the growing conditions in an urban environment are very different from a rural one. Air pollution, lack of sufficient soil for good root growth, insufficient moisture to the roots - not to mention being used as a bike rack – all serve to increase the stress for the urban tree.

The urban forest is a unique environment, and requires special attention. Urban forestry acknowledges that the trees growing in an urban area are out of their natural element and need special care.

Urban Forestry: The art and science of managing public trees in cities, towns and villages. To some, it's planting trees on Main Street; to others, it is leading a tour of notable trees on the town green. To all of us, it's the privilege of sharing our lives with the Urban Forest.

If the urban environment is so hard on trees –

why should we bother growing them there?

Value of Urban Trees

The value of urban trees adds far more to our quality of life than the effort to select, plant and maintain them. Trees provide many ecological or environmental benefits. A short list includes:

- Reducing noise and visual pollution
- Increasing shade that reduces energy costs by 10-50%
- Decreasing storm water runoff
- Reduction of CO_2 and other greenhouse gases
- Cleaner air
- Better water quality
- Lower water treatment costs
- Stabilized soil
- Increasing wildlife habitat
- Smog reduction

Trees also provide many cultural benefits as well, including:

- Increasing real estate values
- Enhancing our main thoroughfares
- Adding to the scenic quality for tourists
- Increasing pedestrians in retail business areas
- Providing a calming influence

Difficulty of the Situation: *Fitting a Round Peg into a Square Hole*

There are so many factors that negatively affect trees in the urban environment that it is a wonder they survive at all. Indeed, urban trees live shorter lives than their rural brethren.

Of all the critical factors affecting an urban tree's long-term survival, available root space is one of the most limiting. The volume of soil available to its roots will determine a tree's growth potential, health and longevity. Plant a large shade tree in a location that has little space for root growth and the tree will die in a few short years. Research has shown that a tree with a 20' canopy needs a minimum of 300 cubic feet of soil volume. To

get that amount of soil it takes a minimum of an eight-foot-by-eight-foot area with a soil depth of four feet. That's easily accomplished in a lawn or park, but not in your typical curbside tree well. Tree roots can share space, an elongated tree well may be able to support two or three healthy trees, and an adjacent lawn or park can provide additional root space.

The key to success is in choosing the right tree for the situation - if the square hole is small, a large round tree just won't fit.

The Life of Street Trees

We can learn from our successes and failures.

Although still alive, these two trees, trimmed because of overhead wires, no longer contribute to the scenic value of the street.

These round trees didn't fit well in the square holes they were given - consequently the sidewalk is cracked and is now a safety and maintenance concern.

Areas with wide planting strips can support larger trees

Rounding out a street corner can also create a wider planting area

Choosing the right tree for the situation can provide a long-term benefit to the community

Invasive Species

Invasive Tendency: Plants classified in this category possess traits that allow them to invade minimally-managed habitats such as forests, woodlands, open spaces, roadsides, etc. In doing so, they threaten naturally-occurring species and have the potential to cause ecological damage to plants, animals and human interests.

Years ago, non-native species were introduced into urban planting because they adapted to difficult situations and were able to survive, but that very quality is now creating additional problems. A prime example is Ailanthus altissima, the Tree-of-Heaven, which was introduced to America and quickly spread to all but a few states; it's now classified as an invasive species and the focus is now on removing it from farm fields, urban alleys and backyards.

HOW TO SUCCEED 2

Understand the Site

Just as in a rural forest, with its interdependent ecosystem of trees, soils, plants and animals, the urban forest is also a complex ecosystem. The layout of plazas, buildings, streets, underground utilities, trees and parks define the urban ecosystem. Each specific site also has a micro-environment. A windy corner is a different climate than a nearby sheltered spot. Heat and glare, strong winds, air pollution and road-salt runoff all can have considerable negative effects on the health of a tree. Trees planted near building corners and in wind tunnels created by tall buildings, can suffer from excessive drying. The urban forest is a difficult place for a tree to grow; making wise choices in tree selection will increase a tree's life span and reduce the cost of long-term maintenance.

Look at the potential site and ask yourself ……

How much space is there between the road and a building and the next tree?

Are there overhead wires?

Will a tree get enough sun to grow?

Will it be surrounded by impervious surfaces and not get needed water?

How much space is there for the canopy to develop?

What other tree species are nearby?

What is the biggest root area you would be able to provide?

Would it hide a storefront?

Will it become a bike rack?

Once you have answered those questions, **Section 4: Tree Selection by Site** will give you a list of trees that might be appropriate for that situation, and after referring to the **Fact Sheets in Section 5** you will be able to select the right tree for that site.

Provide the Best Root Environment

Understanding roots and the environment they grow in, the soil, is vital to maintaining the health and longevity of trees in the human landscape. Roots serve a number of important functions in trees. Structurally, they anchor the tree in place, providing a strong and stable attachment point to the ground. Roots also absorb water and mineral nutrients dissolved in the water, and they transport these raw materials up into the stems and leaves via the shared vascular system. Roots can also store food reserves, usually in the form of starch.

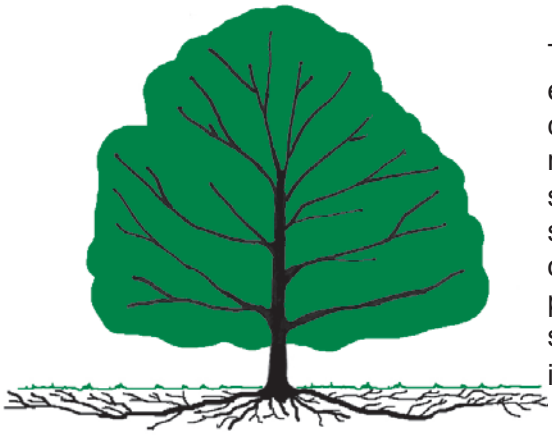
Roots only survive where there is sufficient oxygen and water for growth. Since oxygen from the atmosphere can only slowly diffuse down into the soil, there is more of it near the surface than deeper down. Most water that plant roots use also comes from above in the form of rain. Thus, it should not be surprising that the vast majority of a tree's roots are in the top two feet of soil. Although a few roots may go deeper, the bulk of a root system is very shallow compared to the ultimate height of a tree. The root system extends outward seeking water, oxygen and space, and it often extends far beyond the edges of the branch canopy. (1)

These volunteers from Meskwaka have planted this young tree in an area selected to provide it with a good root environment so it can develop into a mature tree.

(1) Glenn D. Dreyer *Greening Connecticut Cities & Towns: Managing Public Trees and Community Forests*. University of Connecticut 2005.

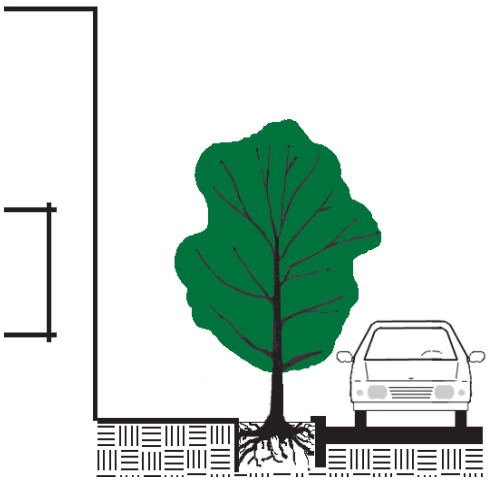
Same Tree, Different Situations

Planting Area: park or lawn



This healthy tree's roots extend well beyond the tree canopy and the majority of the roots are within 18" of the soil surface. This amount of root space provides a good source of water and nutrients, and provides needed structural support so the tree can grow into an attractive specimen.

Planting Area: small tree well



If that same tree were planted in a typical street tree well, the limited area for root growth would cause the tree to be stunted and suffer branch die back resulting in a stressed tree. The goal of a beautiful tree will not be realized.

In addition, roots seeking additional space may cause sidewalks to crack causing a tripping hazard.

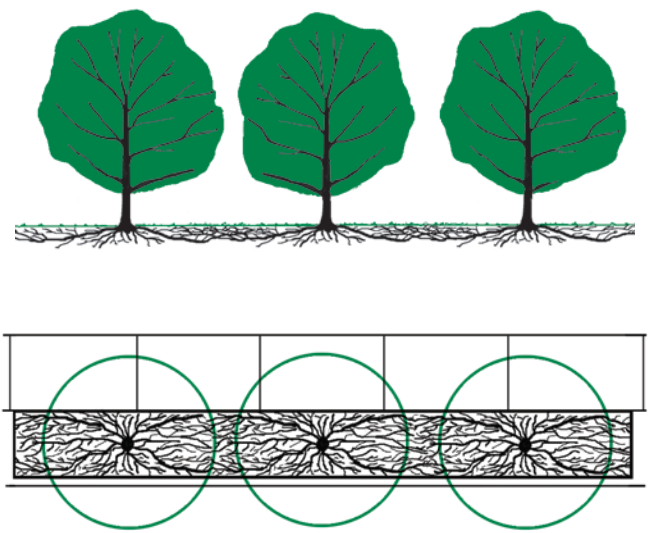
Make the Best of a Difficult Situation

Match the tree species to the available root space, and maximize root space and increase water infiltration by using these techniques:

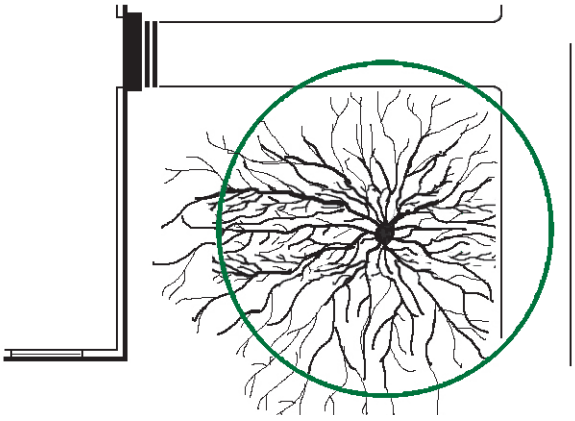
1. Enlarge the tree well dimensions;

2. Use a porous pavement, such as dry-laid bricks in surrounding sidewalk so water can penetrate to the soil below;

3. Combine the planting area for several trees into a one continuous planting strip and tree roots will happily share space;



4. Let the roots borrow available adjacent soil by planting at the back of the sidewalk if there is a park or the lawn of a town building nearby; and/or

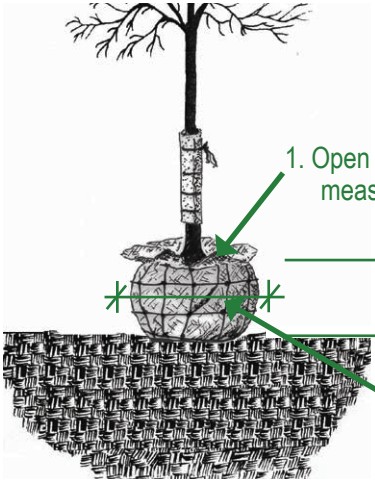


5. Consider using structural soil products that provide for root space under sidewalks.

Ten Steps to Proper Tree Planting

Incorrect planting will kill a tree or at best doom it to a slow decline. Correct tree planting is an easy process if you follow these steps…

1. Find the trunk flare (also called the root collar) – that spot at the base of the trunk where the roots begin to branch out; many times the flare is hidden a few inches under the burlap or excess soil or mulch. Measure from the trunk flare to the bottom of the nursery container or root ball – that's the depth of the planting hole.
2. Measure the diameter of the root ball – the width of the planting hole should be two to three times wider.
3. Dig the hole so that it's bowl-shaped with the sides sloping down to a flat bottom. Don't disturb the soil below the depth you need so that the root ball will be sitting on firm, undisturbed soil and will maintain the proper depth.
4. By handling only the root ball (not the trunk) place the tree upright in the center of the hole, and determine the best orientation. Lowest branches should face the most appropriate direction, and trunk should be straight.
5. Clip and roll-down or remove the wire cage. Remove burlap and nylon string from the top and sides of the root ball so roots can spread (burlap takes years to decompose). Burlap can remain on the bottom of the root ball if not easily removed.
6. Prune cleanly any dead or crushed roots and straighten or cut encircling roots if present.
7. Using the same soil as dug from the hole, fill under and around the root ball to about half the depth and gently press into place. Fill the hole partially with water and wait until it drains. Continue to place soil into the hole until the surface level is at or just below the trunk flare.
8. If in a lawn or park area, create a soil berm around the trunk two to three times the width of the root ball to aid future water absorption. Add 2-3" of mulch over the area, but at least 3" away from the tree's trunk.
9. Remove any tree wrap, tape or string from the trunk.
10. Water the tree thoroughly.



1. Open the wrapping to find the trunk flare, then measure to the bottom of the root ball.

Depth for hole

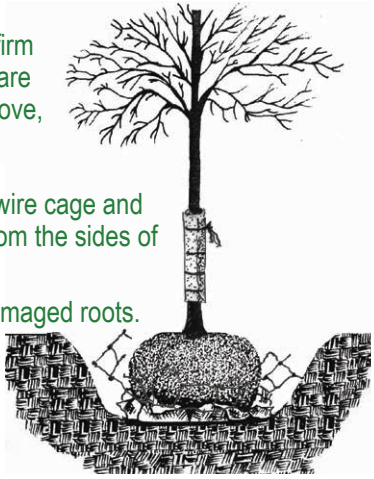
2. Measure the width of the root ball.

3. Dig a hole 2-3 times the width, but no deeper than the rootball.

4. Carefully place tree on firm soil, make sure trunk flare will be at, or slightly above, ground level.

5. Remove the wire cage and the burlap from the sides of the root ball.

6. Prune any damaged roots.

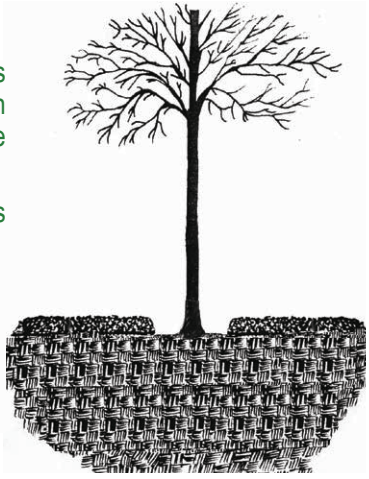


7. Fill the hole halfway with the soil that was removed, press down and water well. When drained, continue replacing the soil up to the trunk flare and gently pack down.

8. Add 2-3 inches of mulch to within 3 inches of trunk.

9. Remove wrap from trunk.

10. Water thoroughly.



Tender Care

Water a newly planted tree at least twice a week for two months and during dry spells in the growing season for the first 2 years. Soak the soil by allowing the water to run slowly at the perimeter or edge of the planting site. If not already done, create a soil or mulch circle around the tree that is three times the size of the root ball. A mulch circle will keep lawn mowers and string trimmers away from the tree avoiding trunk wounding. Even the smallest wound could potentially cause disease that could kill the tree.

Mulch lightly and evenly over an area three times the size of the root ball with two to three inches of organic material – keep mulch a few inches away from the trunk. Mulch that is too deep (over 3 inches) or against the trunk will cause damage to the tree. Remove and replace mulch as needed, and keep grass and weeds out of the mulched area. Grass and weeds compete for the same water and nutrients as the tree. For this reason, it is best not to plant flowers around the base of the tree.

If there is concern that a newly planted tree may topple in a strong wind or if there is high pedestrian traffic, stake and brace the tree. If staking is necessary, support the tree in a way that allows it to move or sway in the wind, while preventing the root ball from shifting in the ground. After one year, remove stakes; or, if site is extremely windy, the stakes can remain for an additional year.

DEVELOP A PLANTING PLAN 3

Mother Nature can easily take the credit for successful rural forests, but successful urban forests need to be planned so they will survive in our man-made environment. Careful planning can increase an urban tree's life span and reduce maintenance costs while providing a beautiful enhancement to the community.

Town, Neighborhood, Street, Block and Tree

Instead of just thinking about that one tree that needs to be replaced, step back and think about that block and street, and the type of neighborhood and how that one tree will fit in with a plan for the whole town. It's not as hard as it sounds, and will give you the needed information to help the urban forest grow in a healthy manner. The side benefit of a neighborhood, or town-wide, planting plan is it can invigorate volunteers, provide information for future budgets, and help with fund-raising.

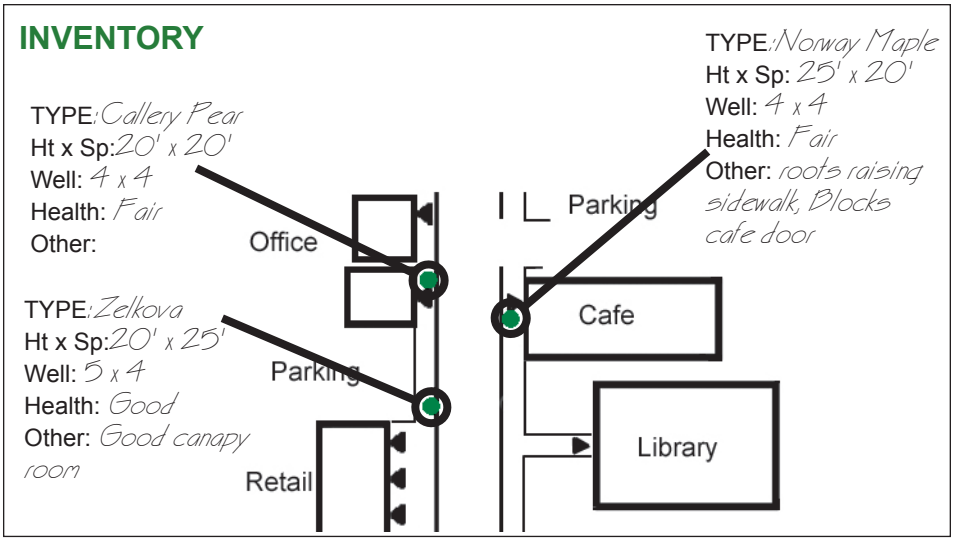
Assess the Situation

Finding out what you have and where it's located is the first step. To do that , develop an inventory of the trees. This can be as simple as notes on a printed map or as detailed as computerized remote sensing position data (GPS) that is downloaded into a graphic information system (GIS) mapping program. In either form, the information should include location, buildings, species, height, spread, planting area, pros, cons and health of each tree.

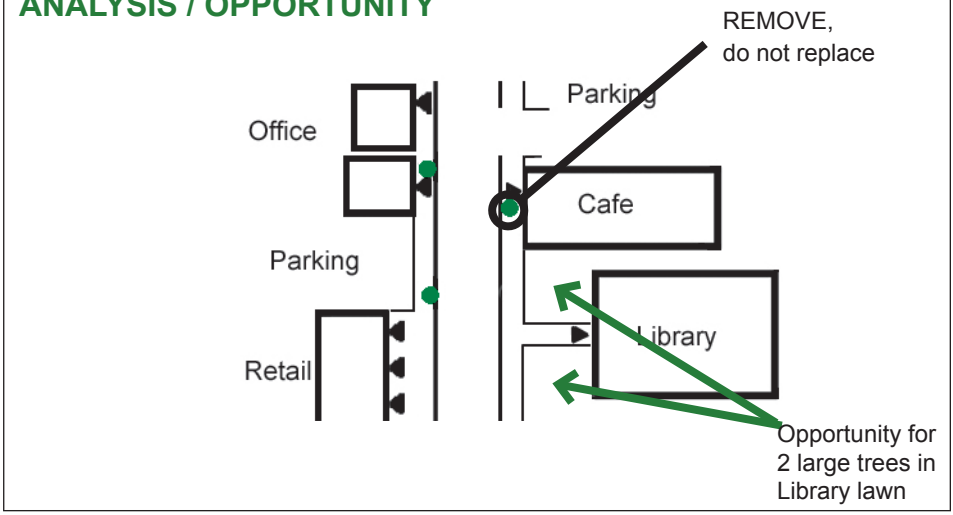
As part of the inventory you can also look for the potential of additional plantings – and inventory this opportunity as well. You can include information on planting area, crown space, overhead wires, underground utilities, amount of sun, driveways, streets, and building entrances that will help you in selecting the best tree for that site.

When looking for opportunities for tree placement look for sites that will maximize root and crown space. If there are utilities (above or below ground) on that side of the street, look for sites behind the sidewalk in lawns or parks that would still provide shade and give the tree a good environment to grow.

INVENTORY



ANALYSIS / OPPORTUNITY



There are three trees in the inventory shown in the top drawing, both trees on the left are in good or fair condition and are in appropriate locations. The tree on the right is in fair condition, but its roots have begun to cause damage to the sidewalk, the tree also blocks the front of a cafe. For these reasons, the tree should be removed and not replaced. Next door to the cafe is the City Library with lawns on either side of the entry walk - this is a terrific opportunity for two large shade trees. Pedestrians on the city sidewalk would still enjoy the shade from trees planted in the library lawn.

Design Considerations

When developing a plan, think about the big picture, new street trees will become part of a larger plant population. You can use this approach to create unique neighborhood characteristics. Perhaps one area will be known for its flowering trees, another for its various oaks and another for groves of maples.

Another goal of tree selection is to avoid over-planting any one species creating a monoculture. A good rule of thumb is to limit any one species to 10% of all trees. This practice will result in a diverse tree population. To understand why this is important, we just need to remember what happened to the American elm. For centuries, the favored street tree was the American elm, and for good reason - it is indeed a beautiful native tree. But by planting a primarily monoculture of elms, many towns lost all their elms to Dutch elm disease, tree by tree. Because there were few other trees along city streets, almost the entire city tree population was devastated.

Spacing and pattern is another design element to consider in the urban environment. Intersections need to have clear sight lines from both directions and clearly visible stop signs and municipal signs. In commercial areas, trees should enhance businesses and not hide the sign or entry. Trees need room to grow and spread their branches; if the spacing is too close to a building or another tree, the health of the tree is threatened. Select a tree that will fit the space. If it's a tight space, and a tall tree is desired, then consider one of the narrow growing cultivars.

The overall objective is to create a broader system of planting, one without a monoculture and one with a variety of species of different ages.

Wallingford, CT residential street

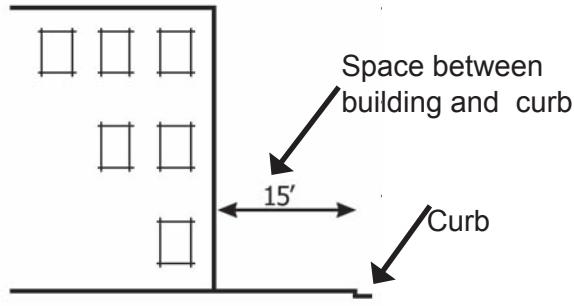
West Hartford, CT commercial street

SELECTION BY SITUATION 4

Although the narrow strip between the curb, sidewalk and buildings is the harshest environment for a tree, frequently that is the only site available for an urban tree.

In the next few pages, examples of situations that are typically found in urban areas with recommended trees for each site are provided. Because each site is unique, this is only a list of options for you to consider. Refer to the Fact Sheets (pages 25-115) for more information on each tree listed.

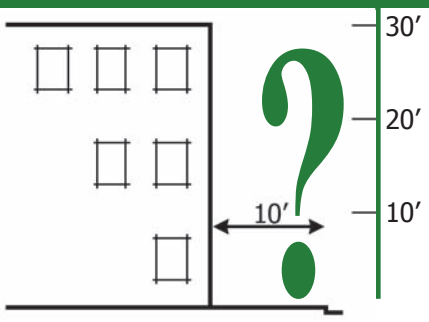
This graphic is used to show the amount of space available. In this case there is 15' from the face of the building to the curb.



Within this area you will need to provide as much root and canopy growing space as possible.

Selection by Situation

Space available:
10′ distance - building to road



Possible options for area with typical overhead wires:

none

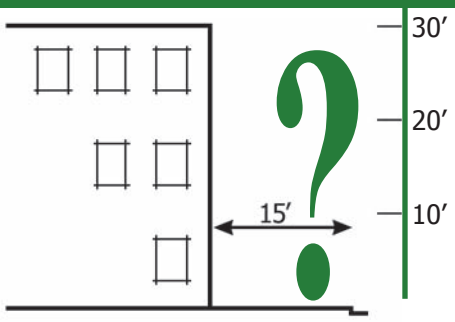
Possible options for area without overhead wires:

Quercus robur ‘Fastigiata’

Please refer to Fact Sheets for specific requirements

Selection by Situation

Space available:
15′ distance - building to road



Possible option for area with typical overhead wires:

Acer buergerianum
Crataegus phaenopyrum ‘Fastigiata’
Crataegus x *lavallei*
Malus spp.
Syringa reticulata

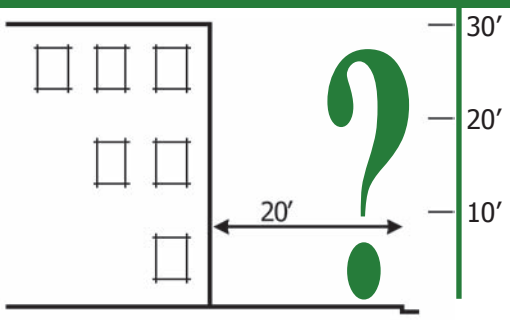
Possible option for area without overhead wires:

trees listed above, plus
Acer rubrum ‘Armstrong’
Quercus robur ‘Fastigiata’
Tilia cordata ‘Chancellor’

Please refer to Fact Sheets for specific requirements

Selection by Situation

Space available:
20′ distance - building to road



Possible options for area with typical overhead wires:

Acer buergerianum
Crataegus phaenopyrum
Crataegus phaenopyrum 'Fastigiata'
Crataegus x *lavallei*
Maackia amurensis
Malus spp.
Ostyra virginiana
Syringa reticulata

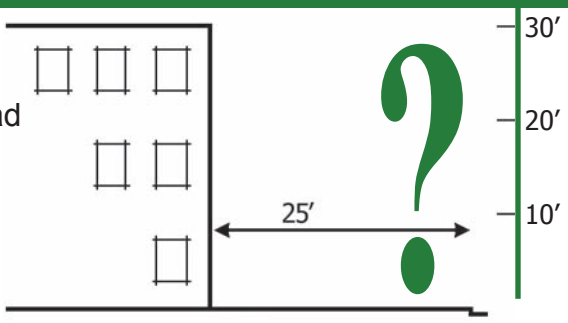
Possible options for area without overhead wires:

trees listed above, plus
Acer rubrum 'Armstrong'
Acer x *Freemani* 'Armstrong'
Corylus colurna
Ginkgo biloba 'Fastigiata'
Quercus robur 'Fastigiata'
Sophora japonica 'Fastigiata'
Tilia cordata 'Chancellor'
Tilia x *euchlora*
Ulmus 'Homestead'

Please refer to Fact Sheets for specific requirements

Selection by Situation

Space available:
25′ distance - building to road



Possible options for area with typical overhead wires:

Acer buergerianum
Acer campestre
Crataegus phaenopyrum
Crataegus phaenopyrum ‘Fastigiata’
Crataegus viridis ‘Winter King’
Crataegus x *lavallei*
Maackia amurensis
Malus spp.
Ostrya viginiana
Syringa reticulata

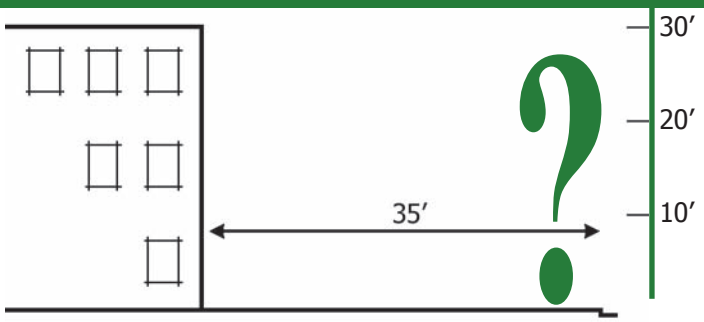
Possible options for area without overhead wires:

trees listed above, plus
Acer rubrum ‘Armstrong’
Acer x *Freemani* ‘Armstrong’
Cercidiphyllum japonicum
Corylus colurna
Fraxinum pennsylvanca “Summit’
Ginkgo biloba
Ginkgo biloba ‘Fastigiata’
Pyrus calleryana ‘Aristocrat’
Quercus palustris
Quercus robur ‘Fastigiata’
Sophora japonica ‘Fastigiata’
Tilia americana ‘Redmond’
Tilia cordata ‘Chancellor’
Tilia tomentosa
Tilia x *euchlora*
Ulmus ‘Homestead’

Please refer to Fact Sheets for specific requirements

Selection by Situation

Space available:
35′ distance -
building to road



Possible options for area with typical overhead wires:

Acer buergerianum
Acer campestre
Crataegus phaenopyrum
Crataegus phaenopyrum 'Fastigiata'
Crataegus viridis 'Winter King'
Crataegus x *lavallei*
Maackia amurensis
Malus spp.
Ostrya virginiana
Syringa reticulata

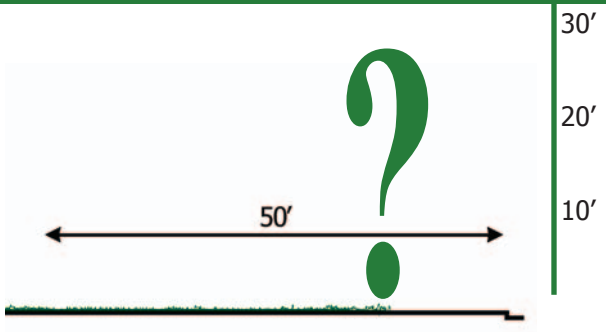
Possible options for area without overhead wires:

trees listed above, plus
Acer rubrum 'Armstrong'
Acer rubrum 'October Glory'
Acer x *Freemani* 'Armstrong'
Acer x *Freeman*i 'Autumn Blaze'
Aesculus flava (octandra)
Aesculus x *carnea*
Celtis occidentalis
Cercidiphyllum japonicum
Corylus colurna
Fraxinum pennsylvanica 'Summit'
Ginkgo biloba
Ginkgo biloba 'Fastigiata'
Gleditsia triacanthos var. *inermis*
Liquidambar styraciflua
Platanus x acerifolia 'Bloodgood'
Pyrus callerana 'Aristocrat'
Quercus coccinea
Quercus palustris
Quercus robur 'Fastigiata'
Quercus x *shumardii*
Sophora japonica
Sophora japonica 'Fastigiata'
Tilia americana 'Redmond'
Tilia cordata
Tilia cordata 'Chancellor'
Tilia tomentosa
Tilia x euchlora
Ulmus 'Homestead'

Please refer to Fact Sheets for specific requirements

Selection by Situation

Space available:
50′ canopy space
and park or lawn
for planting



Possible options for area with typical overhead wires:

Acer buergerianum
Acer campestre
Crataegus phaenopyrum
Crataegus phaenopyrum ‘Fastigiata’
Crataegus viridis ‘Winter King’
Crataegus x *lavallei*
Maackia amurensis
Malus spp.
Ostrya viginiana
Syringa reticulata

Possible options for area without overhead wires:

trees listed above, plus
Acer rubrum ‘Armstrong’
Acer rubrum ‘October Glory’
Acer x Freemani ‘Armstrong’
Acer x Freemani ‘Autumn Blaze’
Aesculus flava (octandra)
Aesculus x *carnea*
Celtis occidentalis
Cercidiphyllum japonicum
Corylus colurna
Fraxinus pennsylvanica ‘Summit’
Ginkgo biloba
Ginkgo biloba ‘Fastigiata’
Gleditsia triacanthos var. *inermis*
Liquidambar styraciflua
Platanus x acerifolia ‘Bloodgood’
Pyrus calleryana ‘Aristocrat’
Quercus coccinea
Quercus palustris
Quercus robur
Quercus robur ‘Fastigiata’
Quercus rubra
Quercus x *shumardii*
Sophora japonica
Sophora japonica ‘Fastigiata’
Tilia americana ‘Redmond’
Tilia cordata
Tilia cordata ‘Chancellor’
Tilia tomentosa
Tilia x *euchlora*
Ulmus ‘Homestead’
Ulmus parvifolia
Zelkova serrata

Please refer to Fact Sheets for specific requirements

FACT SHEETS

5

The goal of the manual is to provide information to help in the tree selection process. To be included in the list of recommended trees, the individual selection had to pass some specific criteria for inclusion.

Each selection must have a track record having successfully survived in the harsh urban environment. Factors such as droughty conditions, soil compaction, low soil volume, heat and glare, air pollution and road salt susceptibility were all considered. In addition, availability in nurseries in the region was also considered.

Botanical name

other varities that have similar characteristics

Size at Maturity: Height: Spread: Approximate maximum size at maturity, actual size will depend on specific growing situation

Growth Rate: Fast = 12” per year
Slow = 5” per year

Origin: Where found naturally

Hardiness Zone: U.S.D.A. cold hardiness zone

Culture: Any special requirements or transplanting issues

Appearance: Shape
Flowers and fruit if signicant

Liabilities: Possible concerns

Drought Tolerant: How tolerant to drought

Insects or Diseases: What insects or diseases have affected this species and to what extent

Common Name

Uses: Appropriate uses

Maintenance Issues: Types of maintenance that could be expected, such as fruit litter or storm damage

Best Planting Time: What time of year would transplanting be most successful

Minimum Recommended Distance from
Building:
Street:
Next Tree:

Based on the average mature size when planted in a confined urban situation

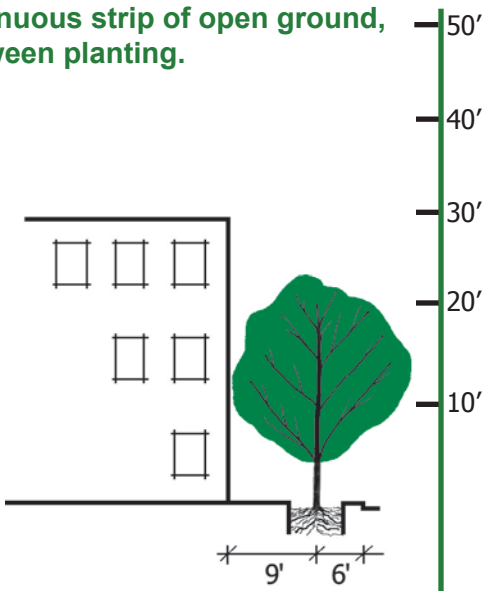
Minimum Recommended Tree Well:

The very minimum size of a tree well, in cubic feet, that this species should be planted. (excluding depth below 4') and various dimensions that would yield the minimum cubic feet.

** If trees must be planted in the space between curb and sidewalk, consider using a continuous strip of open ground, or a porous paving material between planting.

Artist's depiction of this species or cultivar and showing the minimum space required if planted in a dense urban location

If grown in a larger root and canopy environment mature height and width would most likely be greater



Acer buergerianum also 'Streetwise'

Size at Maturity: Height: 20'-25'
Spread: 18'-20'

Growth Rate: Slow to medium
('Streetwise' more vigorous)

Origin: Non-native (China)

Hardiness Zone: 5

Culture: Relatively easy to transplant
Prefers well-drained, slightly acidic soil
Best in full sun

Appearance: Oval to rounded small tree
Fall color red or orange

Liabilities: Relatively problem free
Some winter twig kill

Drought Tolerant: Yes

Insects or Diseases: None serious

Trident Maple

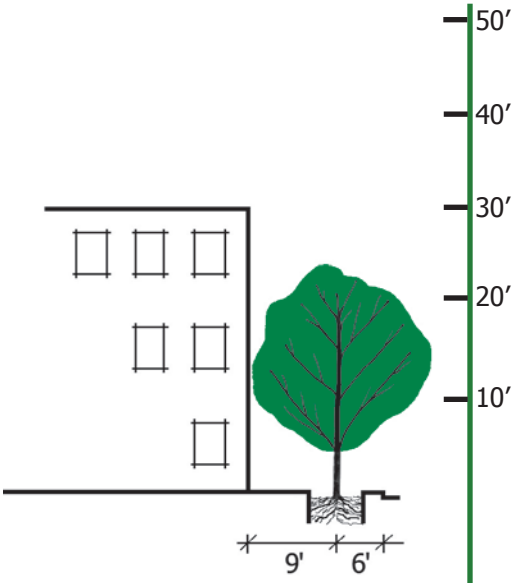
Uses: Height good for under utility lines
Specimen tree in parks and lawns

Maintenance Issues: Debris from occasional winter twig kill

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 9’
Street: 6’
Next Tree: 20’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
5’ x 7’
4’ x 9’



Acer campestre

Size at Maturity: Height: 25'-35'
Spread: 25'-30'

Growth Rate: Slow

Origin: Non-native (Europe, Near East and Africa)

Hardiness Zone: 5 (possibly 4)

Culture:
Adapts to many soils
Prefers full sun or light shade
Easily transplanted
Good salt tolerance

Appearance:
Usually rounded and dense
Dark green foliage with yellow fall color

Liabilities:
Relatively problem free
Abundant fruit; may be invasive
Low branching
Dense shade prohibits grass growth

Drought Tolerant: Somewhat

Insects or Diseases: None serious

Hedge Maple

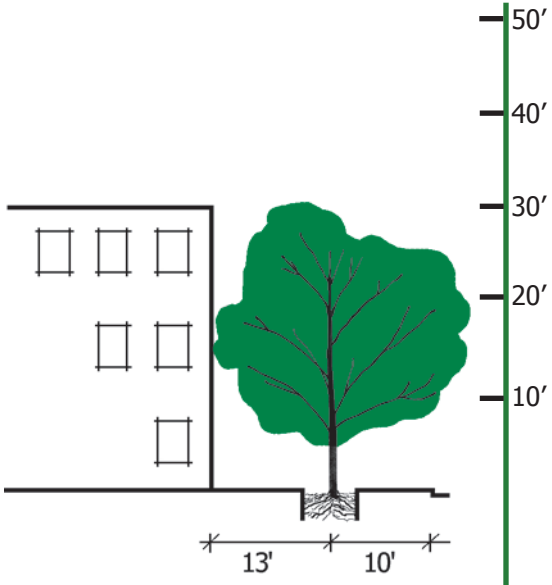
Uses: Street tree for under utility lines
Can prune into hedge

Maintenance Issues: Low branching
Fruit drop may be messy and germinate profusely

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 13’
Street: 10’
Next Tree: 25’

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Acer rubrum 'October Glory'' also 'Northwood', 'Red Sunset'

Size at Maturity: Height: 40'-50'
Spread: 35'-40'

Growth Rate: Medium to Fast

Origin: Native (eastern and central North America)

Hardiness Zone: 3

Culture: Adapts to many soils
Prefers full sun or light shade
Easily transplanted, easy to establish
Tolerates occasional flooding

Appearance: Pyramidal or elliptical when young, spreads with age
Excellent fall color

Liabilities: Can be weak wooded and suffer storm damage

Drought Tolerant: No

Insects or Diseases: None serious
On alkaline soils develops manganese chlorosis

October Glory Red Maple

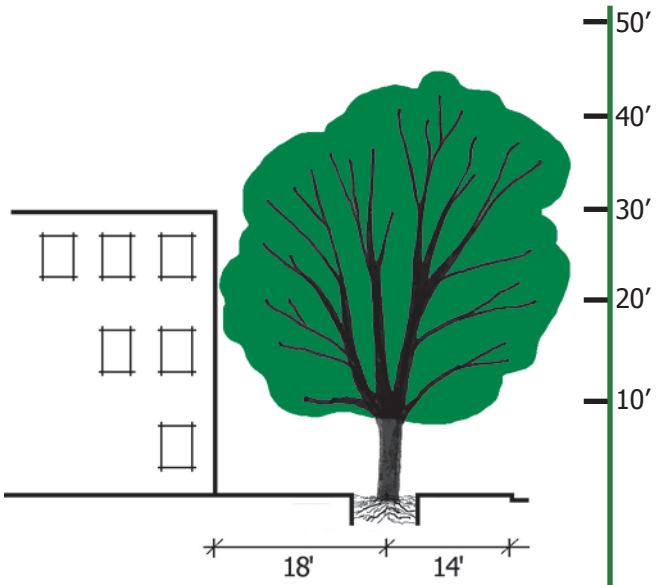
Uses: Street tree if room to spread
Specimen tree in parks and lawns

Maintenance Issues: Somewhat weak wooded, may have storm damage

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 18’
Street: 15’
Next Tree: 35’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Acer rubrum 'Armstrong'

also 'Columnare' 'Bowhall'

Size at Maturity: Height: 50'-60'
Spread: 15'

Growth Rate: Moderate ('Columnare' slower)

Origin: Native (eastern and central North America)

Hardiness Zone: 3

Culture: Adapts to many soils
Prefers full sun or light shade
Easily transplanted

Appearance: Tall and narrow
Columnare has more consistent fall color
Excellent fall color

Liabilities: Can be weak wooded and suffer storm damage

Drought Tolerant: Prefers moist soil, can withstand occasional flooding

Insects or Diseases: Tar spot, verticillium wilt, leaf hoppers

Armstrong Red Maple

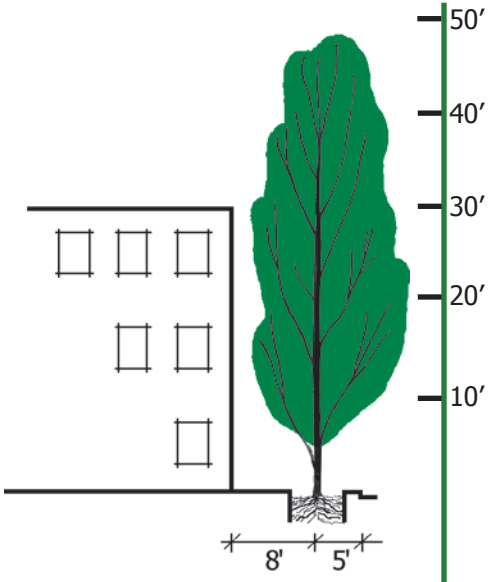
Uses: Street tree in narrow situations

Maintenance Issues: Fruit drop may be messy

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 8’
Street: 5’
Next Tree: 15’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
5’ x 7’



Acer x *freemanii* 'Autumn Blaze'®

also **'Marmo'**
'Autumn Fantasy'
'Scarlet Sentinel'

Size at Maturity:
Height: 50'-55'
Spread: 35'-50'

Growth Rate: Fast

Origin: Hybrid of *A. rubrum* and *A. saccharinum*

Hardiness Zone: 4

Culture:
Adapts to many soils
Prefers full sun or light shade
Easily transplanted

Appearance:
Rounded to oval
Excellent fall color
Seedless, or nearly seedless

Liabilities: None

Drought Tolerant: Somewhat

Insects or Diseases: None significant

Freeman Maple

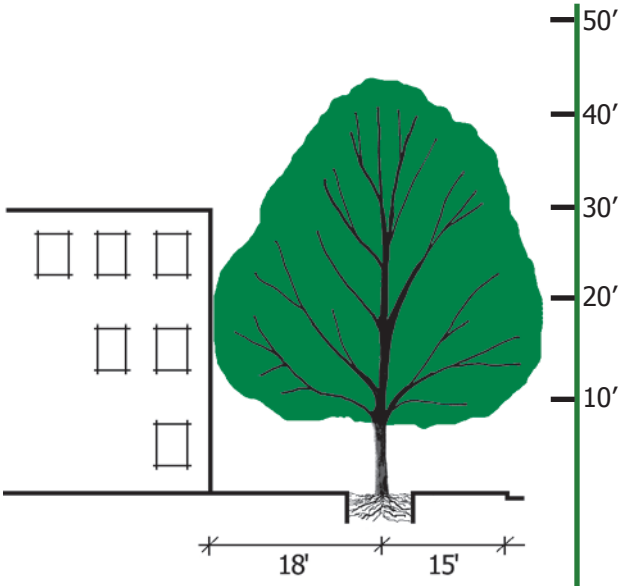
Uses: Street tree if room to spread
Specimen tree in parks and lawns

Maintenance Issues: None

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 18’
Street: 15’
Next Tree: 40’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Acer x *freemanii* 'Armstrong Two' also **'Celebration'**

Size at Maturity:	Height:	50'-55'
	Spread:	20'-25' (Celebration may reacy 40')
Growth Rate:	Fast	
Origin:	Hybrid of *A. rubrum* and *A. saccharinum*	
Hardiness Zone:	4	
Culture:	Adapts to many soils Prefers full sun or light shade Easily transplanted	
Appearance:	Rounded to oval Excellent fall color Seedless, or nearly seedless	
Liabilities:	None	
Drought Tolerant:	Somewhat	
Insects or Diseases:	None significant	

Armstrong Two Freeman Maple

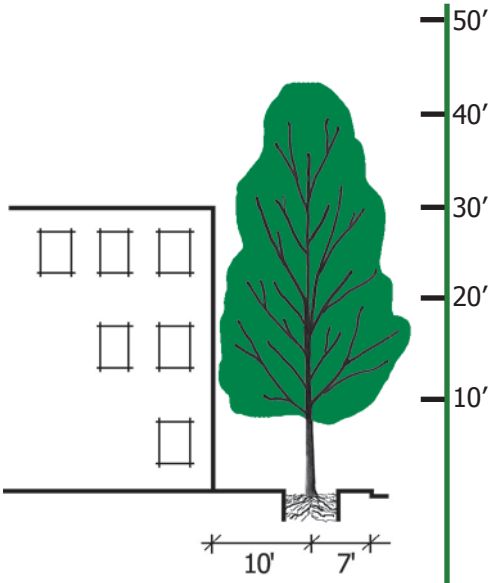
Uses: Street tree in narrow spaces

Maintenance Issues: None

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 20’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Aesculus flava (octandra)

Size at Maturity: Height: 40'-50'
Spread: 35'-40'

Growth Rate: Fast

Origin: Native (mid-Southern United States)

Hardiness Zone: 3

Culture: Prefers a deep, moist, well drained soil, avoid excessively hot, dry locations which can induce leaf scorch
Full sun for good development

Appearance: Large, upright-oval tree with spreading crown
Very showy flowers in May

Liabilities: May be difficult to locate in the trade

Drought Tolerant: No

Insects or Diseases: Leaf scorch and leaf blotch
Numerous insects and diseases can affect it, but is the least bothered of all the Aesculus

Yellow Buckeye

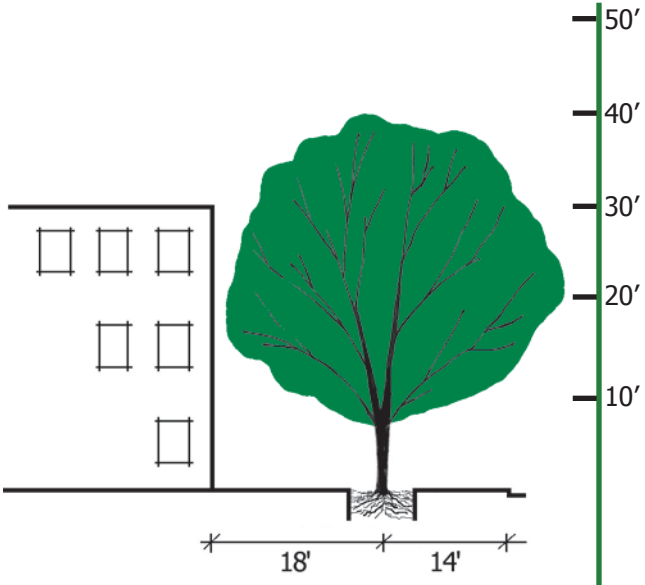
Uses: Street tree if ample room to develop
Specimen tree in lawns and parks

Maintenance Issues: Fruit litter may be messy

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 18’
Street: 14’
Next Tree: 40’

Minimum Recommended Tree Well: 240 cubic feet
8’ x 8’
6’ x 10’



Aesculus x *carnea* also **'Briotii'**

Size at Maturity: Height: 30'-40'
Spread: 30'

Growth Rate: Fast

Origin: Hybrid of *A. pavia (*native to central U.S.) and *A. hippocastanum* (native to eastern Eur.)

Hardiness Zone: 4

Culture:
Adapts to many soils
Prefers full sun or light shade
Easily transplanted, easy to establish
Tolerates occasional flooding

Appearance:
Pyramidal or elliptical when young, spreads with age
Very showy red flowers in late spring

Liabilities: Can be weak wooded and suffer storm damage

Drought Tolerant: Prefers moist soil, can withstand occasional flooding

Insects or Diseases:
None serious
On alkaline soils develops manganese chlorosis

Red Horsechestnut

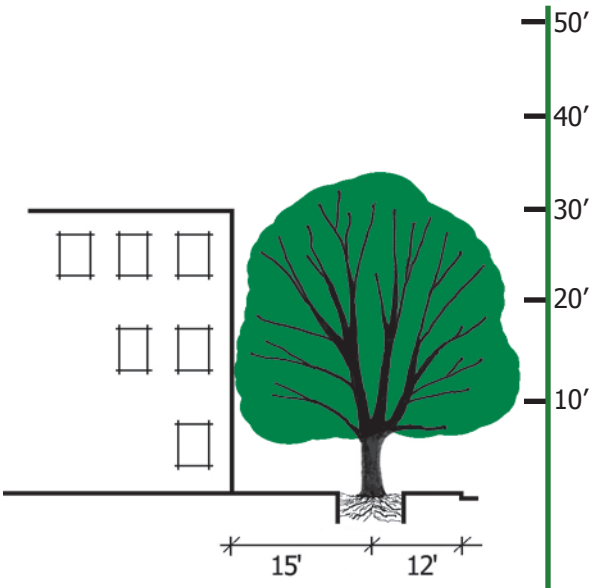
Uses: Street tree if room to spread
Specimen tree in parks and lawns

Maintenance Issues: Somewhat weak wooded, may have storm damage

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 15’
Street: 12’
Next Tree: 30’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Celtis occidentalis

Size at Maturity: Height: 40'-60'
Spread: 35'-40'

Growth Rate: Medium to Fast

Origin: Native (North America, Quebec to Oklahoma)

Hardiness Zone: 3

Culture: Adapts to many soils
Best in full sun
Easily transplanted
Good salt tolerance

Appearance: Cylindrical shape when mature

Liabilities: Can be unattractive if affected by diseases

Drought Tolerant: Somewhat tolerant

Insects or Diseases: Leaf spot, powdery mildew, hackberry nipple gall, scale; problems don't kill tree, but can make tree unattractive

Common Hackberry

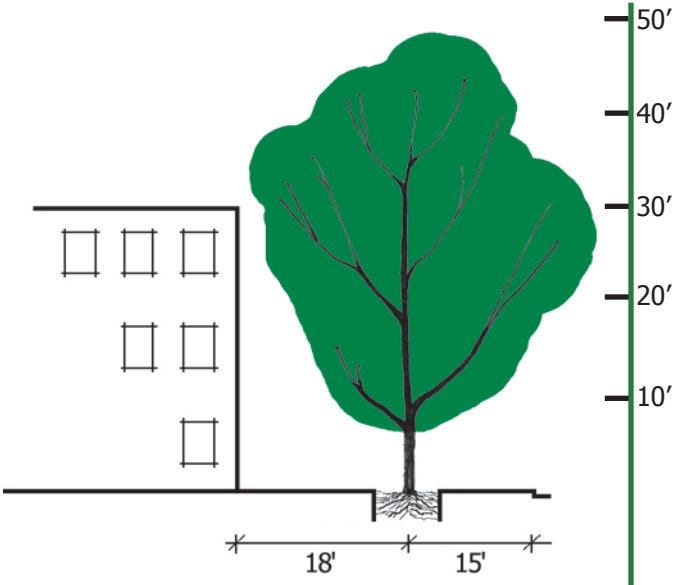
Uses: Street tree if room to spread
Specimen tree in lawns and parks

Maintenance Issues: Fruit drop may be messy

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 18’
Street: 15’
Next Tree: 40’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
4’ x 9’
5’ x 7’



Cercidiphyllum japonicum

Size at Maturity: Height: 40'-60'
Spread: 20'-30'

Growth Rate: Medium to Fast

Origin: Non-native (Japan and China)

Hardiness Zone: 4

Culture: Adapts to soil pH
Prefers rich moist well-drained soil
Not easy to transplant

Appearance: Shape can vary from pyramidal to spreading
Interesting foliage
Good fall color

Liabilities: Difficult to transplant

Drought Tolerant: Once established

Insects or Diseases: None serious

Katsuratree

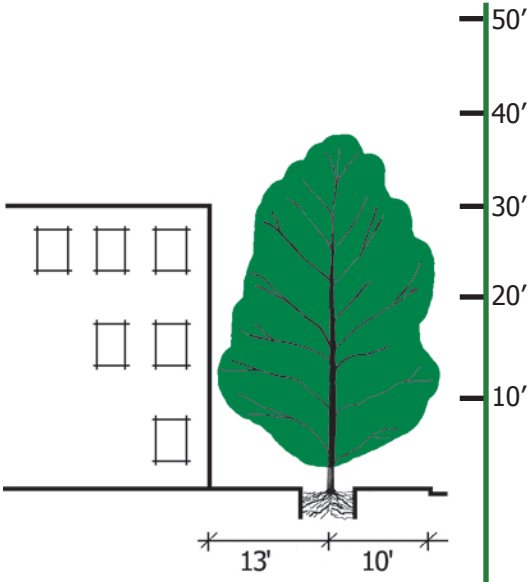
Uses: Street tree if ample room
Specimen tree in lawns and parks

Maintenance Issues: Not drought tolerant until well established; requires water during establishment and dry periods

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 13’
Street: 10’
Next Tree: 30’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
4’ x 9’
5’ x 7’



Corylus colurna

Size at Maturity: Height: 40'-50'
Spread: 20'-25'

Growth Rate: Medium

Origin: Non-native (Southeastern Europe)

Hardiness Zone: 4

Culture: Tolerant of extreme conditions
Prefers well-drained, loamy soil
Best in full sun

Appearance: Pyramidal

Liabilities: Difficult to locate in trade
Hard to propagate and transplant

Drought Tolerant: Somewhat

Insects or Diseases: None serious

Turkish Filbert

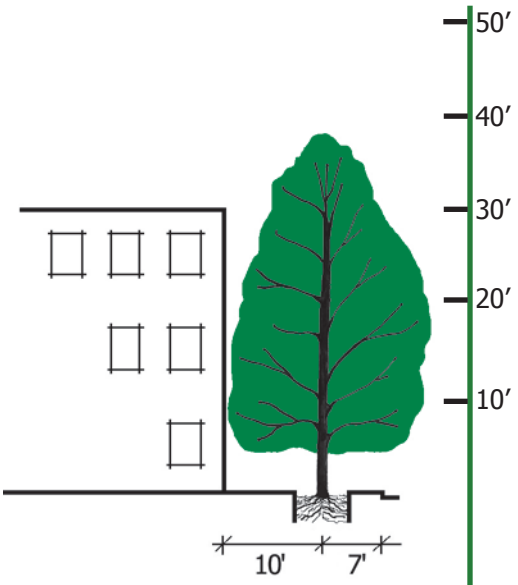
Uses: Street tree
Specimen tree in parks and lawns

Maintenance Issues: Some fruit litter

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 25’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
4’ x 9’
5’ x 7’



Crataegus phaenopyrum

Size at Maturity: Height: 25'-30'
Spread: 20'-25'

Growth Rate: Medium

Origin: Native (Virginia to Florida)

Hardiness Zone: 4

Culture: Easy to grow, tolerates pruning
Prefers moist, well-drained soil
Best in full sun

Appearance: Rounded
Profuse flowers in the spring
followed by red fruit

Liabilities: Thorns can be hazardous
Tends to have many pest problems similar to apple trees

Drought Tolerant: No

Insects or Diseases: Prone to apple-cedar rust

Washington Hawthorn

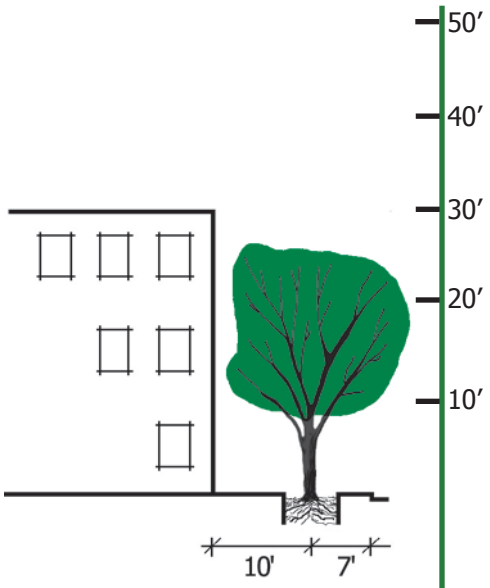
Uses: Street tree under utility lines
Specimen tree in parks and lawns
Pruned into hedge

Maintenance Issues: Thorns may be hazardous

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 30’

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Crataegus phaenopyrum 'Fastigiata'

Size at Maturity: Height: 25'-30'
Spread: 18'-20'

Growth Rate: Medium

Origin: Native (Virginia to Florida)

Hardiness Zone: 4

Culture: Easy to grow, tolerates pruning
Prefers moist, well-drained soil
Prefers full sun

Appearance: Somewhat narrower than species
Profuse flowers in the spring
followed by red fruit

Liabilities: Thorns can be hazardous
Tends to have many pest problems similar to apple trees

Drought Tolerant: No

Insects or Diseases: Prone to apple-cedar rust

Fastigiate Washington Hawthorn

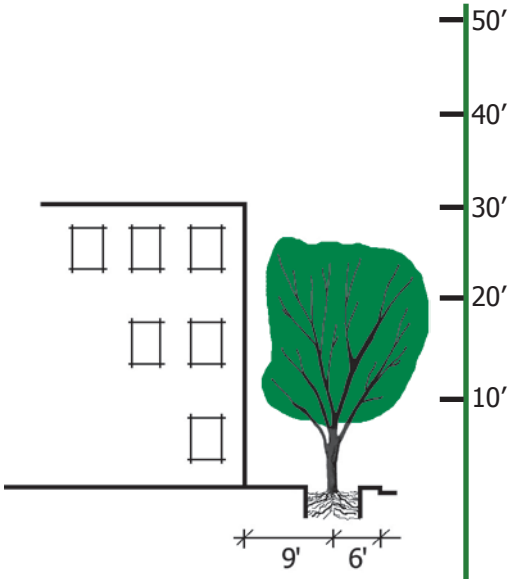
Uses: Street tree under utility lines or in narrow spaces
Pruned into hedge

Maintenance Issues: Thorns may be hazardous

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 9’
Street: 6’
Next Tree: 30’

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Crataegus viridis 'Winter King'

Size at Maturity: Height: 18'-20'
Spread: 25'-30'

Growth Rate: Slow

Origin: Native (eastern United States)

Hardiness Zone: 4

Culture: Easy to grow, tolerates pruning
Prefers moist, well-drained soil
Best in full sun

Appearance: Rounded with horizontal branching
Profuse flowers in the spring
followed by red fruit

Liabilities: May have some thorns
Tends to have many pest problems similar to apple trees

Drought Tolerant: No

Insects or Diseases: Can be prone to apple-cedar rust

Winter King Hawthorn

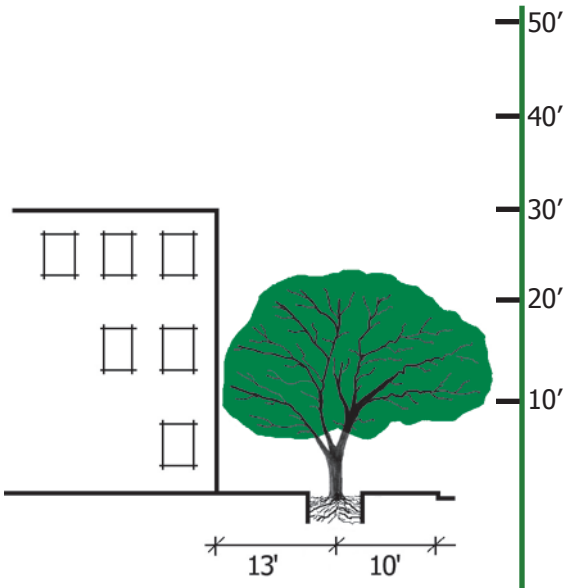
Uses:
Street tree under utility lines
Specimen tree
Pruned into hedge

Maintenance Issues: Thorns, if present, may be hazardous

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 13’
Street: 10’
Next Tree: 30’

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Crataegus x lavallei

Size at Maturity: Height: 15'-30'
Spread: 10'-20'

Growth Rate: Slow

Origin: Hybrid of *C.stipulacea* (native to Mexico) and *C.crusgalli* (native to eastern North America)

Hardiness Zone: 4

Culture: Easy to grow, tolerates pruning
Prefers moist, well-drained soil
Best in full sun

Appearance: Rounded with dense branching
Profuse flowers in the spring followed by red fruit

Liabilities: Thorns may be hazardous
Development not uniform, may be lopsided

Drought Tolerant: No

Insects or Diseases: Can be prone to apple-cedar rust, but less so than other hawthorns

Lavalle Hawthorn

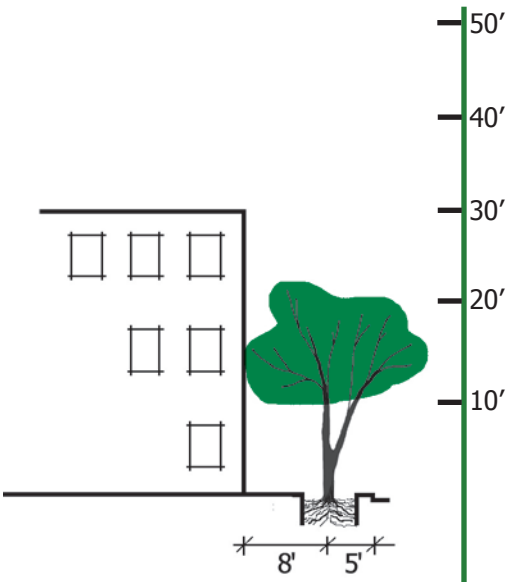
Uses: Street tree under utility lines or narrow spaces
Pruned into hedge

Maintenance Issues: Thorns may be hazardous

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 8’
Street: 5’
Next Tree: 20’

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Fraxinus pennysylvanica 'Summit'

also 'Patmore' 'Marshall's Seedless' 'Newport' 'Urbanite'

Size at Maturity: Height: 50'-60'
Spread: 30'-40'

Growth Rate: Fast

Origin: Native (eastern United States)

Hardiness Zone: 3 Note: 'Urbanite' hardy to zone 5

Culture:
Easy to transplant and establish
Prefers moist, deep, fertile soil
Best in full sun
Good salt tolerance

Appearance: Large upright oval tree

Liabilities:
Female trees produce many seedlings (varieties listed above are generally seedless)
Wood can be weak

Drought Tolerant: Somewhat

Insects or Diseases:
Ash borers
Ash flower galls (male plants)
Ash dieback (mycoplasma)

Summit Green Ash

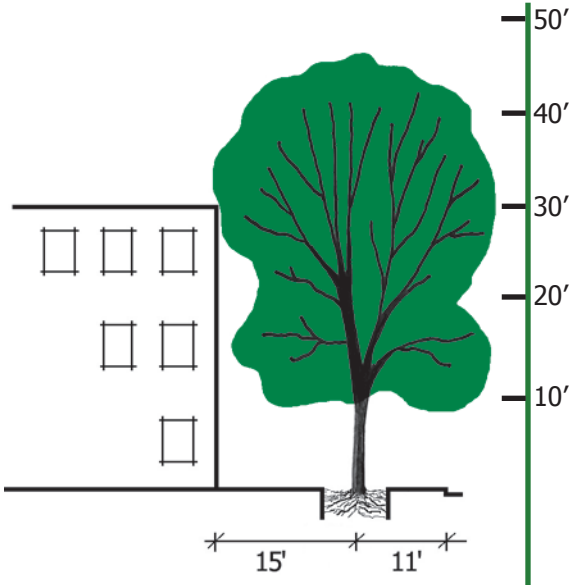
Uses: Street tree if ample room
Specimen tree in lawns and parks

Maintenance Issues: Female tree produces many seedlings
Somewhat weak wooded, may have storm damage

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 15’
Street: 11’
Next Tree: 35’

Minimum Recommended Tree Well: 240 cubic feet
8’ x 8’
6’ x 10’



Gingko biloba

Size at Maturity: Height: 40'-80'
Spread: 30'-40'

Growth Rate: Medium

Origin: Non-native (China)

Hardiness Zone: 4

Culture:
Prefers deep, sandy soil with moderate moisture
Best in full sun
Once established is tolerant of difficult situations
Good salt tolerance

Appearance:
Conical when young, branches spread with age
Interesting foliage
Good fall color

Liabilities:
None serious
Female plants have foul smelling fruit

Drought Tolerant: Somewhat

Insects or Diseases: None serious

Ginkgo

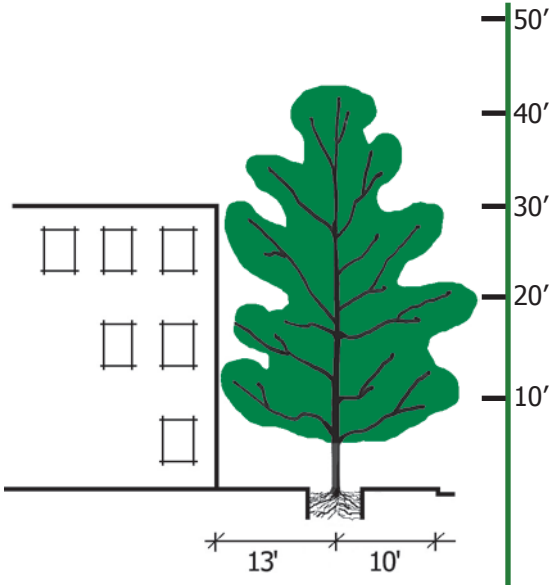
Uses:
Street tree if ample room to grow
Specimen tree in lawns and parks

Maintenance Issues:
Not easy to obtain only male trees
May be difficult to establish after transplant

Best Planting Time:
Spring or Fall

Minimum Recommended Distance from
Building: 15’
Street: 12’
Next Tree: 35’

Minimum Recommended Tree Well:
160 cubic feet
7’ x 7’
5’ x 10’
6’ x 9’



Ginko biloba 'Fastigiata' also **'Sentry'**

Size at Maturity: Height: 40'-60'
Spread: 20'-25'

Growth Rate: Medium

Origin: Non-native (China)

Hardiness Zone: 4

Culture: Prefers deep, sandy soil with moderate moisture
Prefers full sun
Once established is tolerant of difficult situations

Appearance: Conical when young, stays narrow with growth
Interesting foliage

Liabilities: None serious
Female plants have foul smelling fruit

Drought Tolerant: Somewhat

Insects or Diseases: None serious

Fastigiate Ginkgo

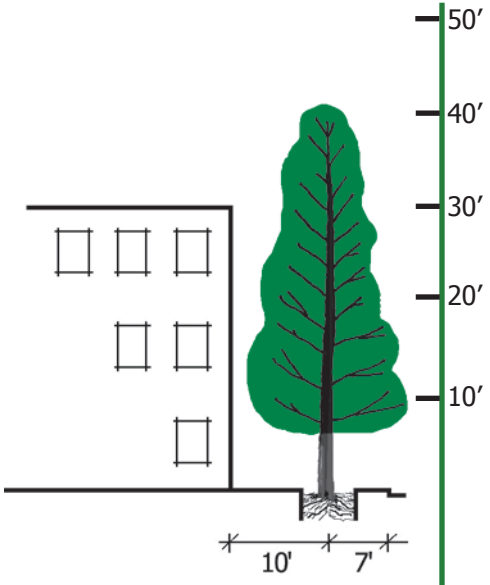
Uses: Street tree in narrow spaces

Maintenance Issues: Select only male trees
May be difficult to establish after transplant

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 25’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
4’ x 9’
5’ x 7’



Gleditsia triacanthos var. *inermis*

also **'Shademaster' 'Skyline' 'Moraine' 'Halka' 'Sunburst'**

Size at Maturity: Height: 40'-45'
Spread: 35'-40'

Growth Rate: Fast

Origin: Native (central United States)

Hardiness Zone: 4

Culture: Prefers deep, moist, fertile soil with neutral pH
Best in full sun
Once established is tolerant of difficult situations
Somewhat salt tolerant

Appearance: Medium to large tree
Rather loose and open, casts light shade

Liabilities: Main trunk may be short
var. inermis should be thornless
Currently overused, monoculture a concern

Drought Tolerant: Somewhat

Insects or Diseases: Susceptible to bagworm, spider mites, pod gall, midge and cankers

Thornless Honeylocust

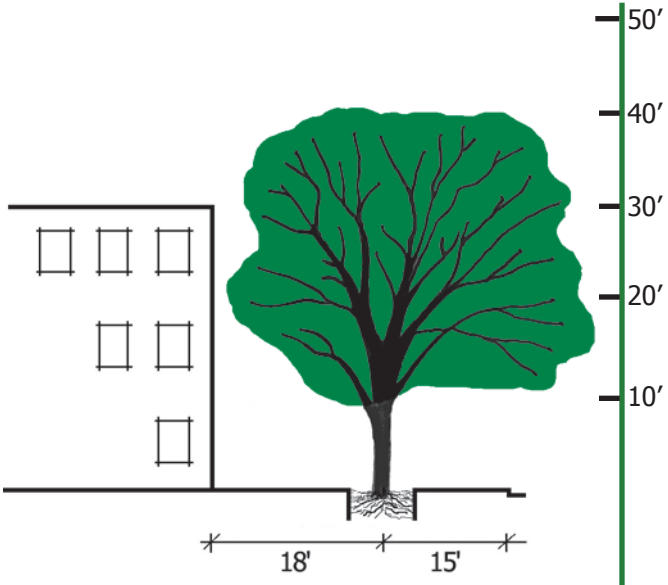
Uses:
Street tree if ample room
Specimen tree in lawns and parks

Maintenance Issues:
Select only thornless varieties
Pods may be messy if present

Best Planting Time:
Spring or Fall

Minimum Recommended Distance from
Building: 18’
Street: 15’
Next Tree: 40’

Minimum Recommended Tree Well:
160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6 x 7’



Liquidambar styraciflua

Size at Maturity: Height: 60'-75'
Spread: 40'-60'

Growth Rate: Medium to fast

Origin: Native (eastern United States)

Hardiness Zone: 5

Culture:
Prefers deep, moist, fertile soil
Best in full sun, tolerates partial shade
Transplant only B&B, use larger plants in colder areas to avoid cold injury to twigs

Appearance:
Large tree, central leader
Pyramidal when young, rounded when mature
Great fall color

Liabilities:
Shallow root system; slow to establish
Spiny fruit
Lack of cold-hardiness of young trees (use only northern seed sources for best results)

Drought Tolerant: No

Insects or Diseases:
None serious
Iron chlorosis in high pH soils

Sweetgum Tree

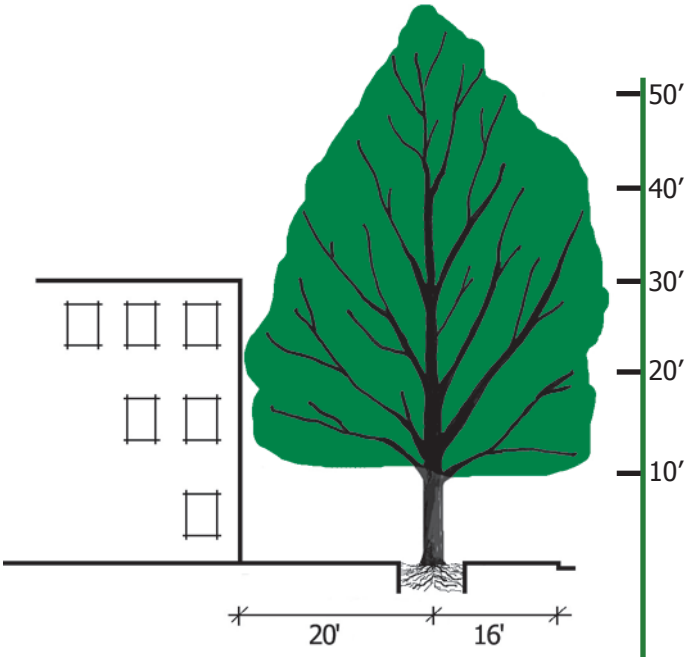
Uses: Street tree if ample room
Specimen tree in lawns and parks

Maintenance Issues: Shallow roots may cause sidewalk heave
Fruit may be messy

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 20’
Street: 16’
Next Tree: 50’

Minimum Recommended Tree Well: 240 cubic feet
8’ x 8’
6’ x 10’



Maackia amurensis

Size at Maturity: Height: 20'-30'
Spread: 20'-30'

Growth Rate: Slow

Origin: Non-native (Manchuria)

Hardiness Zone: 4

Culture: Prefers loose, well-drained soil
Best in full sun, tolerates partial shade
Easily transplanted

Appearance: Small tree with short main trunk
Rounded shape, open interior
Yellow flowers in midsummer

Liabilities: None serious

Drought Tolerant: Somewhat

Insects or Diseases: None serious

Amur Maackia

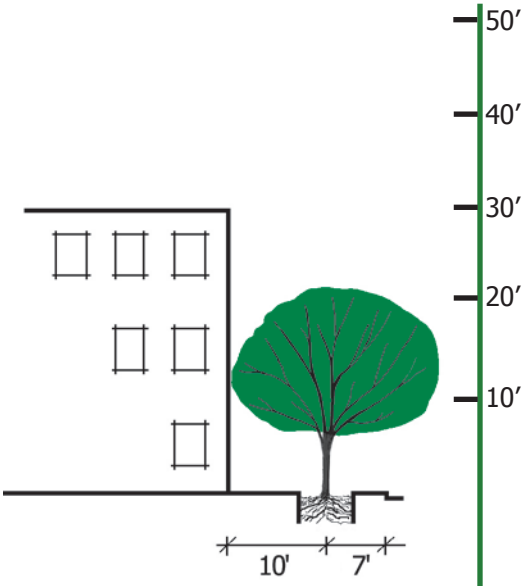
Uses: Street tree under utility lines
Specimen tree in lawns and parks

Maintenance Issues: None

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 25’

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Malus floribunda

Size at Maturity: Height: 15'-25'
Spread: 15'-25'

Growth Rate: Medium to Fast

Origin: Non-native (Japan)

Hardiness Zone: 4

Culture: Prefers loose, well-drained soil
Best in full sun
Easily transplanted

Appearance: Small tree with broad crown
Spring flowers, followed by colorful fruit

Liabilities: None serious

Drought Tolerant: Somewhat

Insects or Diseases: None serious

Japanese Flowering Crabapple

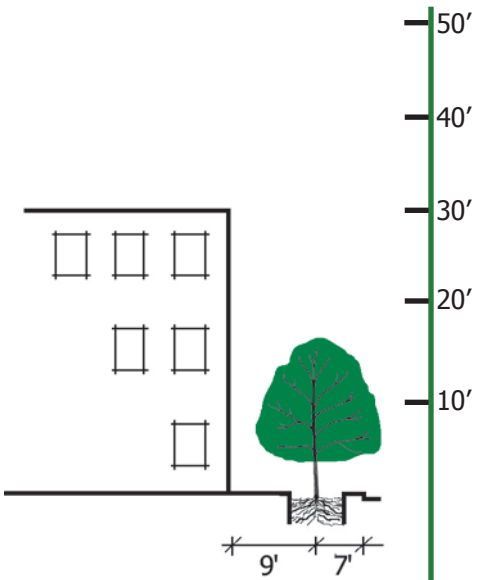
Uses: Street tree under utility lines
Specimen tree in small parks

Maintenance Issues: Fruit drop may be messy

Best Planting Time: Spring only

Minimum Recommended Distance from
Building: 9’
Street: 7’
Next Tree: 20’

Minimum Recommended Tree Well: 100 cubic feet
5’ x 5’
4’ x 6’



Malus 'Prairiefire'

Size at Maturity: Height: 15'-20'
Spread: 15'-20'

Growth Rate: Medium to Fast

Origin: Hybrid

Hardiness Zone: 4

Culture: Prefers loose, well-drained soil
Best in full sun
Easily transplanted

Appearance: Small tree with pink flowers in spring followed by red fruit that persist well into winter

Liabilities: None serious

Drought Tolerant: Somewhat

Insects or Diseases: None serious

Prairiefire Crabapple

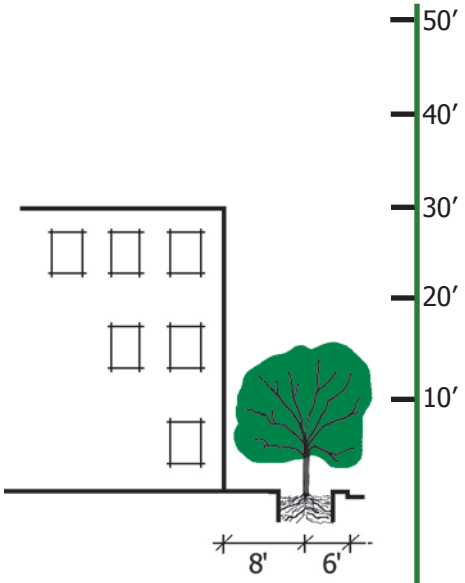
Uses: Street tree under utility lines
Specimen tree in small park

Maintenance Issues: None

Best Planting Time: Spring only

Minimum Recommended Distance from
Building: 8’
Street: 6’
Next Tree: 20’

Minimum Recommended Tree Well: 100 cubic feet
5’ x 5’
4’ x 6’



Malus - other varities

The following flowering crabapples also show good disease resistance:

		Height	Spread	Zone
Malus atrosanguinea	Carmine Crabapple	20	25	4
Malus baccata 'Jackii'	Jack Crabapple	20	25	2
Malus baccata mandshurica	Manchurian Crabapple	20	25	2
Malus hupehensis	Tea Crabapple	20	25	4
Malus sieboldii zumi	Zumi Crabapple	20	25	5
M. s. z. 'Calocarpa'	Zumi Calocarpa Crabapple	20	25	5
Malus 'Adams'	Adams Crabapple	20	25	4
Malus 'Baskatong'	Baskatong Crabapple	25	25	4
Malus 'Beverly'	Beverly Crabapple	20	25	5
Malus 'Bob White'	Bob White Crabapple	20	25	4
Malus 'Centurion'	Centurion Crabapple	20	15	5
Malus 'Donald Wyman'	Donald Wyman Crabapple	20	25	5
Malus 'Doubloons'	Doubloons Crabapple	20	15	5
Malus 'Evelyn'	Evelyn Crabapple	20	25	3
Malus 'Harvest Gold'	Harvest Gold Crabapple	20	25	5
Malus 'Jewelberry'	Jewelberry Crabapple	25	15	5
Malus 'Katherine'	Katherine Crabapple	20	25	4
Malus 'Liset'	Liset Crabapple	20	25	5
Malus 'Prince Georges'	Prince Georges Crabapple	20	25	4
Malus 'Professor Sprenger'	Prof. Sprenger Crabapple	20	25	5
Malus 'Red Jade'	Red Jade Crabapple	20	25	5
Malus 'Robinson'	Robinson Crabapple	20	25	5
Malus 'Selkirk'	Selkirk Crabapple	20	25	5
Malus 'Sentinel'	Sentinel Crabapple	20	15	4
Malus 'Snowdrift'	Snowdrift Crabapple	20	25	4
Malus 'White Angel'	White Angel Crabapple	20	25	4
Malus 'Zumirang'	Zumirang Crabapple	20	25	5

	Habit	Flower	Fruit
Malus atrosanguinea	Rounded	White	Red
Malus baccata 'Jackii'	Upright	White	Yellow
Malus baccata mandshurica	Upright	White	Yellow
Malus hupehensis	Vase	Pink/Wh	Yellow
Malus sieboldii zumi	Pyramidal	White	Red
M. s.z. 'Calocarpa'	Rounded	White	Red
Malus 'Adams'	Rounded	Dk Pink	Red
Malus 'Baskatong'	Wide	White	Orange
Malus 'Beverly'	Rounded	White	Red
Malus 'Bob White'	Rounded	White	Yellow
Malus 'Centurion'	Upright	Rosy	Red
Malus 'Donald Wyman'	Wide	White	Red
Malus 'Doubloons'	Upright	White	Yellow
Malus 'Evelyn'	Weeping	Rosy	Red
Malus 'Harvest Gold'	Upright	White	Gold
Malus 'Jewelberry'	Rounded	White	Red
Malus 'Katherine'	Oval	Pink	Red
Malus 'Liset'	Red Foliage	Red/Pink	DkRed
Malus 'Prince Georges'	Upright	Rosy	None
Malus 'Professor Sprenger'	Upright	White	Orange
Malus 'Red Jade'	Weeping	White	Red
Malus 'Robinson'	Upright	Pink	Red
Malus 'Selkirk'	Rounded	Pink	Red
Malus 'Sentinel'	Narrow	White	Red
Malus 'Snowdrift'	Rounded	White	Orange
Malus 'White Angel'	Rounded	White	Red
Malus 'Zumirang'	Weeping	Pink/Wh	Red

Ostrya virginiana

Size at Maturity: Height: 25'-40'
Spread: 20'-30'

Growth Rate: Slow to Medium

Origin: Native (eastern United States)

Hardiness Zone: 4

Culture: Prefers moist, cool, fertile, slightly acidic soil
Best in full sun, tolerates partial shade
Easily transplanted

Appearance: Pyramidal when young, rounding with age
Upright branching
Gnarly shaped trunk and large branches

Liabilities: May be difficult to locate in the trade
Difficult to establish
Not salt tolerant

Drought Tolerant: Somewhat if in partial shade

Insects or Diseases: None serious

Hophornbeam

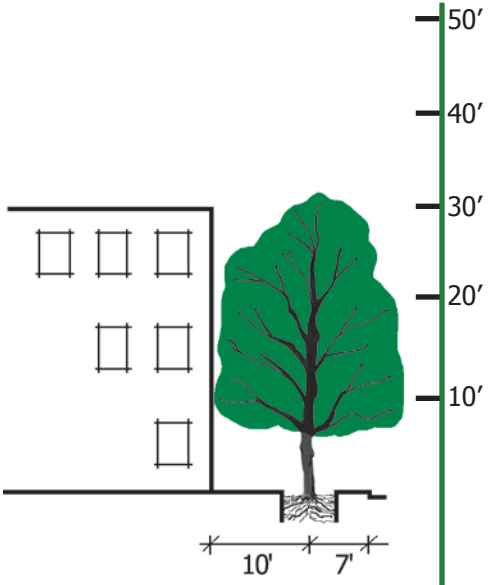
Uses: Street tree if away from road salt
Specimen tree in parks and lawns

Maintenance Issues: None

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 25’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Platanus x *acerifolia* 'Bloodgood'

Size at Maturity: Height: 50'-60'
Spread: 40'-60'

Growth Rate: Medium to fast

Origin: Hybrid of *P. occidentalis* (native to US) and *P. orientalis* (native to Asia)

Hardiness Zone: 5

Culture:
Prefers deep, moist, fertile soil
Best in full sun
Easily transplanted

Appearance:
Very large tree
Pyramidal in youth, spreading with age
Interesting bark

Liabilities:
Cold injury in harsh winters
Needs large area to grow

Drought Tolerant: Yes

Insects or Diseases:
Species is susceptible to anthracnose, Bloodgood cultivar is resistant
Canker is a serious problem
Powdery mildew, American plum borer and sycamore lacebug

London Plane Tree

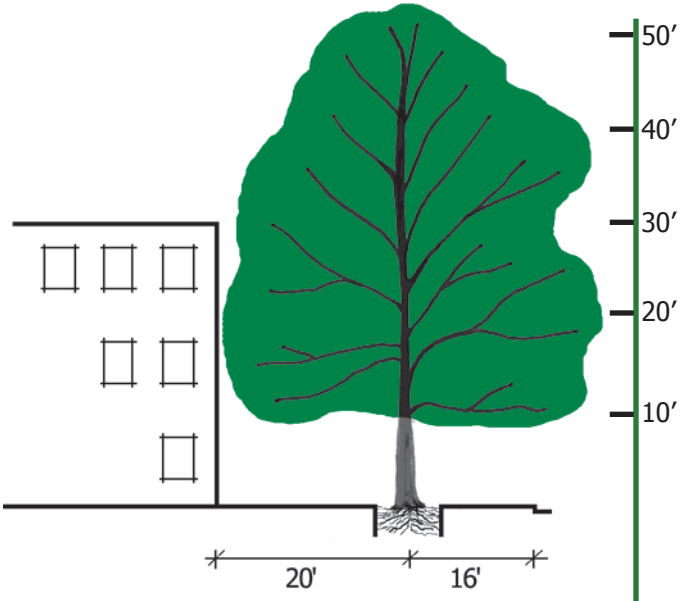
Uses: Street tree if ample room
Specimen tree in parks and lawns

Maintenance Issues: None

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 20’
Street: 16’
Next Tree: 40’

Minimum Recommended Tree Well: 240 cubic feet
8’ x 8’
6 x 10’



Pyrus calleryana 'Aristocrat'

also **'Chanticleer"**
'Redspire'

Size at Maturity: Height: 30'-35'
Spread: 25'-30' ('Chanticleer' 15')

Growth Rate: Fast

Origin: Non-native (Korea and Japan)

Hardiness Zone: 5

Culture:
Very adaptable
Prefers full sun
Easily transplanted during dormant season
Good salt tolerance

Appearance:
Spreading with age
Abundant flowers for 1-2 weeks in spring

Liabilities:
Weak wood, may split with age, wind, snow or ice
Spring flowers have unpleasant odor

Drought Tolerant: Yes

Insects or Diseases: Species is susceptible to fireblight, of above cultivars 'Chanticleer' is most resistant

Callery Pear

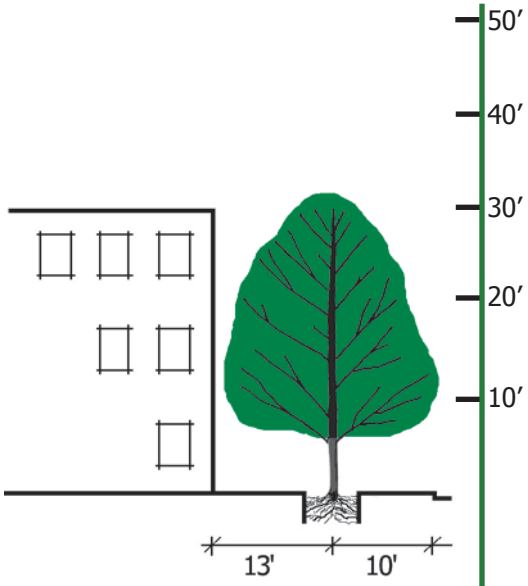
Uses: Street tree under utility lines
Specimen tree in parks and lawns

Maintenance Issues: Fruit drop may be messy

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 13’ (10’ ‘Chanticleer’)
Street: 10’ (8’ ‘Chanticleer’)
Next Tree: 25’ (15’ ‘Chanticleer’)

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Quercus coccinea

Size at Maturity: Height: 60'-75'
Spread: 40'-45'

Growth Rate: Fast

Origin: Native (eastern and central United States)

Hardiness Zone: 4

Culture: Prefers full sun
Prefers acidic, sandy soil

Appearance: Large upright tree

Liabilities: Difficult to transplant
Hard to find in the trade

Drought Tolerant: Yes

Insects or Diseases: None serious

Scarlet Oak

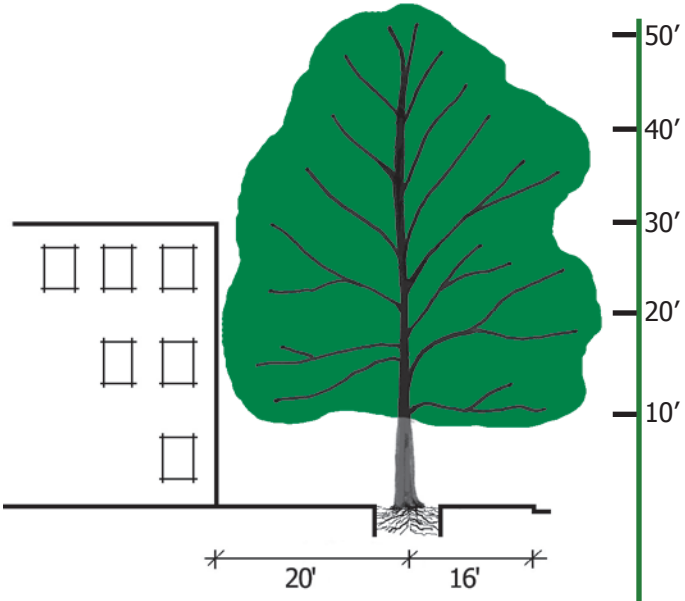
Uses: Street tree if ample room to spread
Specimen tree in parks and lawns

Maintenance Issues: None

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 20’
Street: 16’
Next Tree: 45’

Minimum Recommended Tree Well: 240 cubic feet
8’ x 8’
6 x 10’



Quercus palustris

Size at Maturity: Height: 60'-70' (or larger in park or lawn)
Spread: 25'-40'

Growth Rate: Fast

Origin: Native (northern United States)

Hardiness Zone: 4

Culture: Best in full sun
Prefers moist, fertile, acidic, well-drained soil
Easy to transplant

Appearance: Pyramidal when young, oval with age
Dense and twiggy

Liabilities: Needs room to grow

Drought Tolerant: No

Insects or Diseases: Iron chlorosis on high pH soils
Horned oak gall

Pin Oak

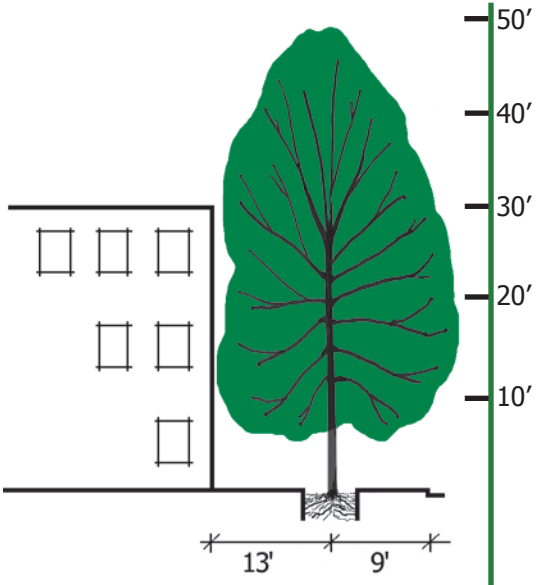
Uses: Street tree if ample room to grow
Specimen tree in parks and lawns

Maintenance Issues: None

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 13’
Street: 9’
Next Tree: 30’

Minimum Recommended Tree Well: 240 cubic feet
8 x 8’
6 x 10’



Quercus robur also **'Concordia'**

Size at Maturity: Height: 40'-60' (or larger in park or lawn)
Spread: 50'-70'

Growth Rate: Medium

Origin: Non-native (Europe, north Africa and western Asia)

Hardiness Zone: 5, possibly 4

Culture: Best in full sun
Prefers moist, fertile, acidic, well-drained soil

Appearance: Large, spreading tree
Pyramidal when young, develops broad crown

Liabilities: Needs room to grow
Difficult to locate in commerce
Twig or branch kill in severe winters

Drought Tolerant: No

Insects or Diseases: Powdery mildew

English Oak

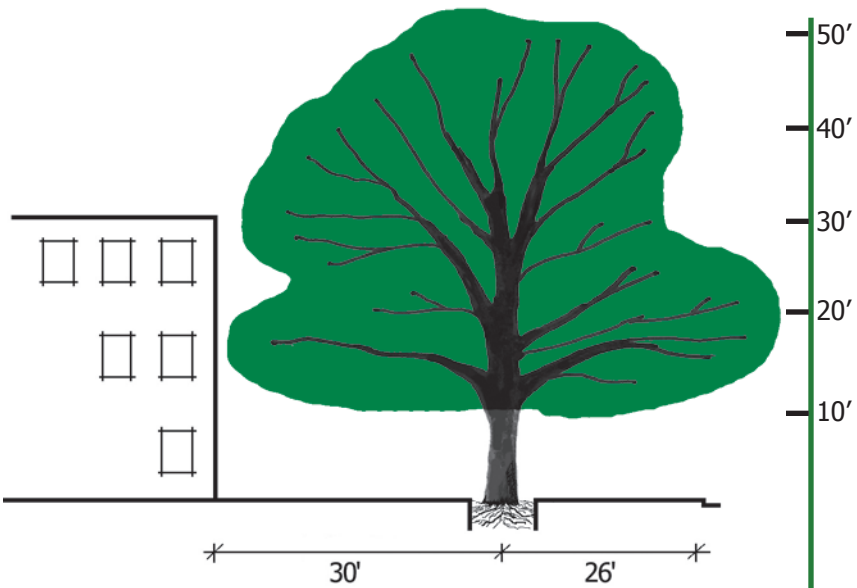
Uses: Street tree if ample room to grown
Specimen tree in parks in lawns

Maintenance Issues: May have twig or branch kill
Fruit drop may be messy

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 30’
Street: 26’
Next Tree: 60’

Minimum Recommended Tree Well: 240 cubic feet
6 x 10’



Quercus robur 'Fastigiata'

Size at Maturity: Height: 50'-70'
Spread: 10'-15'

Growth Rate: Medium

Origin: Non-native (Europe, north Africa and western Asia)

Hardiness Zone: 5

Culture: Prefers full sun
Prefers moist, fertile, acidic, well-drained soil

Appearance: Tall, very narrow tree

Liabilities: Difficult to locate in commerce
Twig or branch kill in severe winters

Drought Tolerant: No

Insects or Diseases: Powdery mildew

Fastigiate English Oak

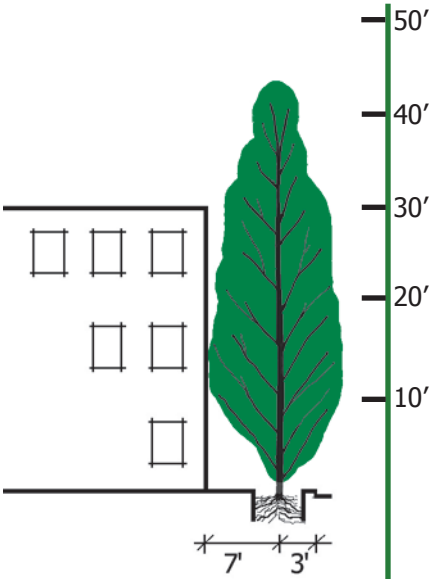
Uses: Street tree in narrow spaces

Maintenance Issues: May have twig or branch kill
Fruit drop may be messy

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 7’
Street: 3’
Next Tree: 15’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
4’ x 9’
5’ x 7’



Quercus rubra

Size at Maturity:	Height:	60'-75' (or larger in park or lawn)
	Spread:	60'-75'
Growth Rate:	Fast	
Origin:	Native (northern United States)	
Hardiness Zone:	3	
Culture:	Prefers full sun Prefers well-drained, acidic, sandy soil Good salt tolerance	
Appearance:	Large spreading tree	
Liabilities:	Needs ample room to develop	
Drought Tolerant:	Somewhat	
Insects or Diseases:	Chlorosis in high pH soils Caterpillars may feed on foliage	

Red Oak

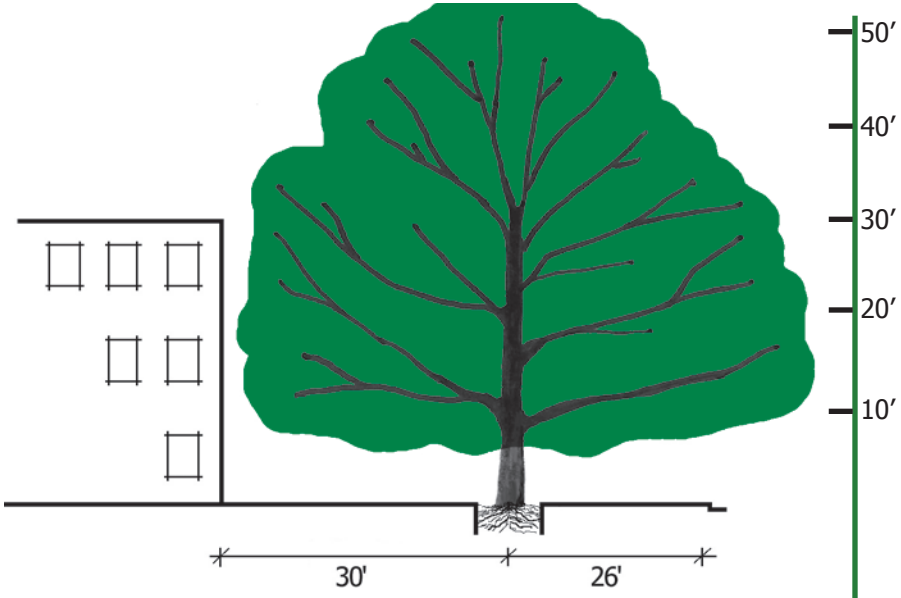
Uses: Street tree if ample room to grow
Specimen tree in parks and lawns

Maintenance Issues: None

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 30’
Street: 25’
Next Tree: 60’

Minimum Recommended Tree Well: 240 cubic feet
8’ x 8’
6 x 10’



Quercus shumardii

Size at Maturity: Height: 40'-60'
Spread: 40'-60'

Growth Rate: Medium

Origin: Native (eastern and central United States)

Hardiness Zone: 5

Culture: Best in full sun
Prefers moist, well-drained soil
Easily transplanted

Appearance: Large spreading tree

Liabilities: Needs ample room to develop

Drought Tolerant: Yes

Insects or Diseases: Oak wilt will kill tree
Mites, root rot
scale, borers, brown felt fungus

Shumard Oak

Uses: Street tree if ample room to grow
Specimen tree in parks and lawns

Maintenance Issues: Acorns can be a litter problem

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 20’
Street: 16’
Next Tree: 45’

Minimum Recommended Tree Well: 240 cubic feet
8’ x 8’
6 x 10’

Sophora japonica also **'Regent'**

Size at Maturity: Height: 40'-60'
Spread: 40'-60'

Growth Rate: Medium to Fast

Origin: Non-native (China and Korea)

Hardiness Zone: 5, possibly 4

Culture: Prefers full sun
Prefers moist, fertile, well-drained soil
Difficult to establish, prone to winter injury in youth

Appearance: Large spreading tree
Very showy creamy white flowers in summr
Good fall color

Liabilities: Needs ample room to develop

Drought Tolerant: No

Insects or Diseases: Canker possible

Japanese Scholar Tree

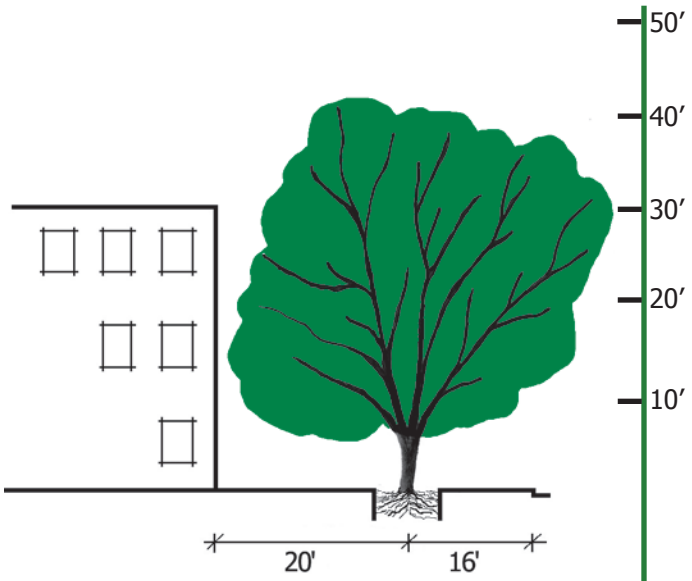
Uses:
Street tree if ample room to grow
Specimen tree in parks and lawns

Maintenance Issues:
Twig kill in severe winters
Flower and fruit drop may be messy

Best Planting Time:
Spring or Fall

Minimum Recommended Distance from
Building: 20’
Street: 16’
Next Tree: 45’

Minimum Recommended Tree Well:
240 cubic feet
8’ x 8’
6 x 10’



Sophora japonica 'Fastigiata'

Size at Maturity: Height: 40'-60'
Spread: 20'-40'

Growth Rate: Medium to Fast

Origin: Non-native (China and Korea)

Hardiness Zone: 5

Culture: Prefers full sun
Prefers moist, fertile, well-drained soil
Difficult to establish, prone to winter injury in youth

Appearance: Oval upright growth
Creamy white flowers in summer

Liabilities: None

Drought Tolerant: No

Insects or Diseases: Canker is possible

Fastigiate Scholar Tree

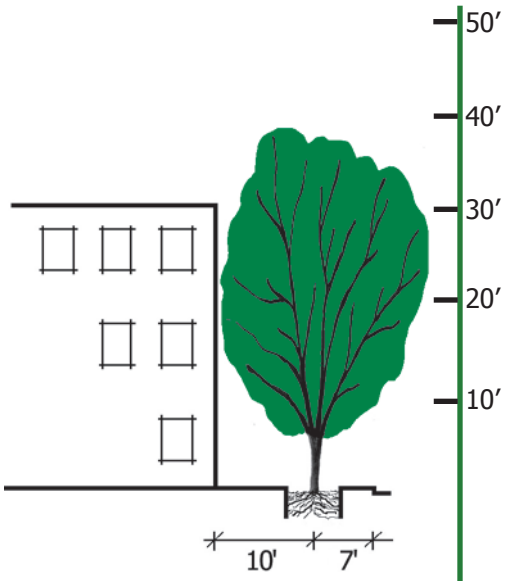
Uses: Street tree in narrow spaces

Maintenance Issues: Twig kill in severe winters
Flower and fruit drop may be messy

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 25’

Minimum Recommended Tree Well: 160 cubic feet
6.6’ x 6.5’
4’ x 10’
5’ x 8’
6 x 7’



Syringa reticulata

Size at Maturity: Height: 20'-30' (possibly to 45')
Spread: 15'-25'

Growth Rate: Medium

Origin: Non-native (northern Japan)

Hardiness Zone: 3

Culture: Best in full sun, tolerates part shade
Prefers slightly acidic, well-drained soil
Does not do well in zones warmer than 6

Appearance: Small flowering tree
Profuse white flowers in early summer

Liabilities: None

Drought Tolerant: Somewhat

Insects or Diseases: None serious
May have caterpillar damage

Japanese Tree Lilac

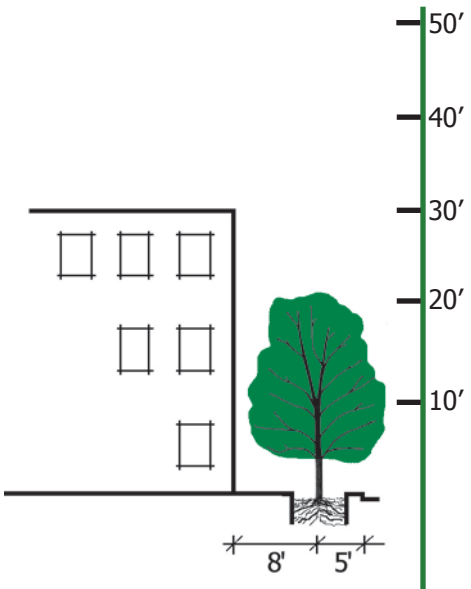
Uses: Street tree under utility lines
Specimen tree in small parks and lawns

Maintenance Issues: None

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 8’
Street: 5’
Next Tree: 20’

Minimum Recommended Tree Well: 120 cubic feet
5.5’ x 5.5’
4’ x 8’
5’ x 6’



Tilia americana 'Redmond'

Size at Maturity:	Height: Spread:	50'-60' 25'-30'
Growth Rate:	Fast	
Origin:	Native (eastern North America)	
Hardiness Zone:	4	
Culture:	Full sun to light shade Prefers moist, fertile, deep soils Easily transplanted	
Appearance:	Medium to large tree, oval shape Dense branching	
Liabilities:	Attracts bees when in bloom Tends to form basal suckers	
Drought Tolerant:	Somewhat	
Insects or Diseases:	Japanese beetles may damage foliage Aphids, borers, beetles, leafminer and scales	

Redmond American Linden

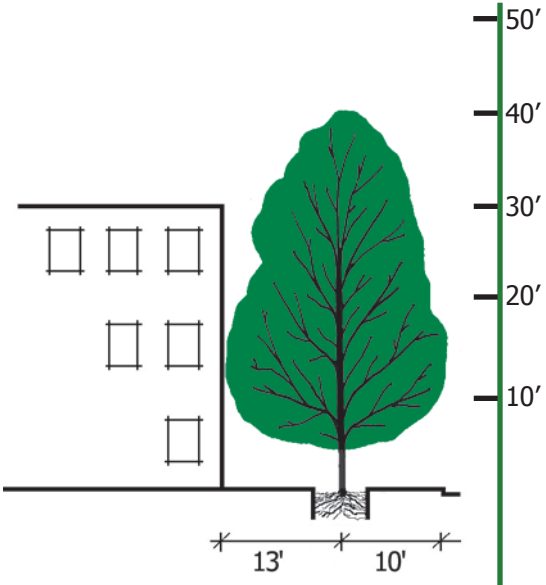
Uses:
Street tree if room to grow
Specimen tree in parks and lawns

Maintenance Issues:
May need to prune basal sprouts
If present, insect drop is messy

Best Planting Time:
Spring or Fall

Minimum Recommended Distance from
Building: 13’
Street: 10’
Next Tree: 30’

Minimum Recommended Tree Well:
160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Tilia cordata

also **'Greenspire'**
'Glenleven'

Size at Maturity: Height: 50'-60'
Spread: 30'-35'

Growth Rate: Medium

Origin: Non-native (Europe)

Hardiness Zone: 4

Culture: Full sun to light shade
Prefers moist, fertile, well-drained, deep soils
Easily transplanted

Appearance: Medium to large tree, dense branching

Liabilities: Attracts bees when in bloom
Tends to form basal suckers

Drought Tolerant: Somewhat

Insects or Diseases: Japanese beetles may damage foliage
Aphids
Sooty mold

Littleleaf Linden

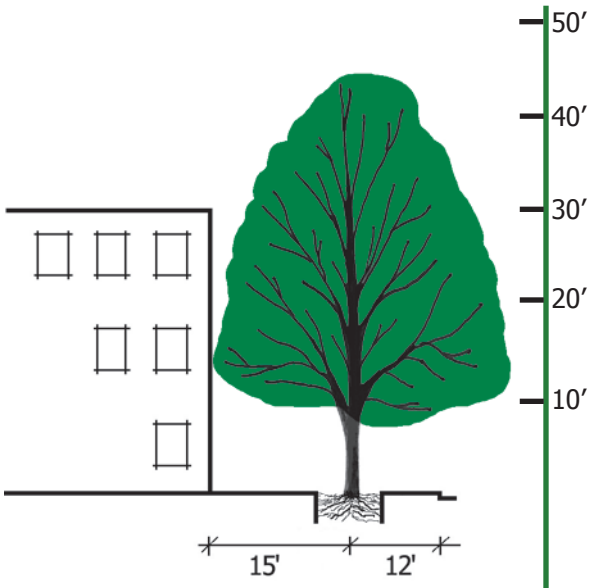
Uses: Street tree if room to grow
Specimen tree in parks and lawns
Pruned into hedge

Maintenance Issues: May need to prune basal sprouts

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 15’
Street: 12’
Next Tree: 35’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Tilia cordata 'Chancellor'

Size at Maturity: Height: 50'-60'
Spread: 18'-20'

Growth Rate: Fast

Origin: Non-native (Europe)

Hardiness Zone: 4

Culture: Full sun to light shade
Prefers moist, fertile, well-drained, deep soils
Easily transplanted

Appearance: Medium to large tree, dense branching

Liabilities: Attracts bees when in bloom
Tends to form basal suckers

Drought Tolerant: Yes

Insects or Diseases: Japanese beetles may damage foliage
Aphids
Sooty mold

Chancellor Littleleaf Linden

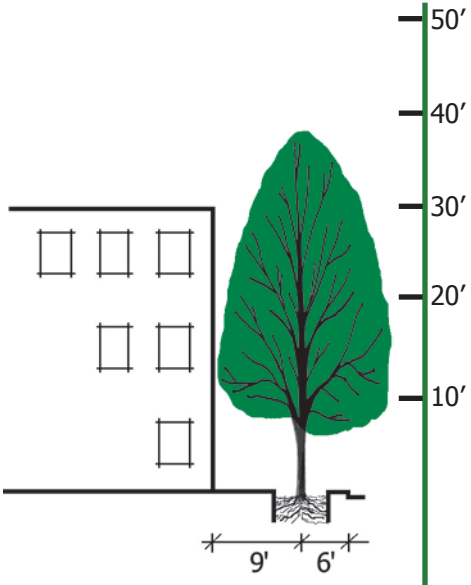
Uses: Street tree in narrow spaces

Maintenance Issues: May need to prune basal sprouts

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 9’
Street: 6’
Next Tree: 20’

Minimum Recommended Tree Well: 140 cubic feet
6’ x 6’
4’ x 9’
5’ x 7’



Tilia tomentosa

Size at Maturity: Height: 40'-50'
Spread: 25'-35'

Growth Rate: Medium

Origin: Non-native (western Asia, southeastern Europe)

Hardiness Zone: 5, possibly 4

Culture: Full sun to light shade
Prefers moist, fertile, well-drained, deep soils
Easily transplanted

Appearance: Large tree, upright branching

Liabilities: Attracts bees when in bloom
Tends to form suckers

Drought Tolerant: Yes

Insects or Diseases: Japanese beetles may damage foliage
Aphids
Sooty mold

Silver Linden

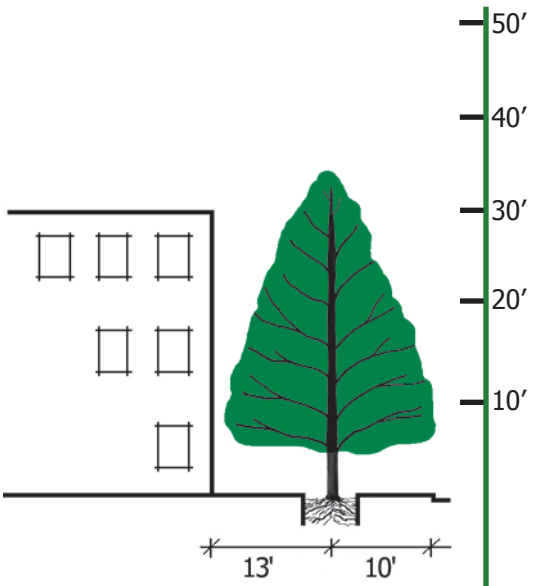
Uses: Street tree if ample room to grow
Specimen tree in parks and lawns

Maintenance Issues: May need to prune suckers

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 13’
Street: 10’
Next Tree: 30’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Tilia x euchlora

Size at Maturity: Height: 40'-60'
Spread: 20'-30'

Growth Rate: Medium

Origin: Hybrid developed in the 19th century

Hardiness Zone: 3

Culture: Full sun to light shade
Prefers moist, fertile, well-drained, deep soils
Easily transplanted

Appearance: Medium to large tree, branching to the ground

Liabilities: Attracts bees when in bloom
Tends to form suckers

Drought Tolerant: Yes

Insects or Diseases: Japanese beetles may damage foliage
Aphids
Sooty mold

Crimean Linden

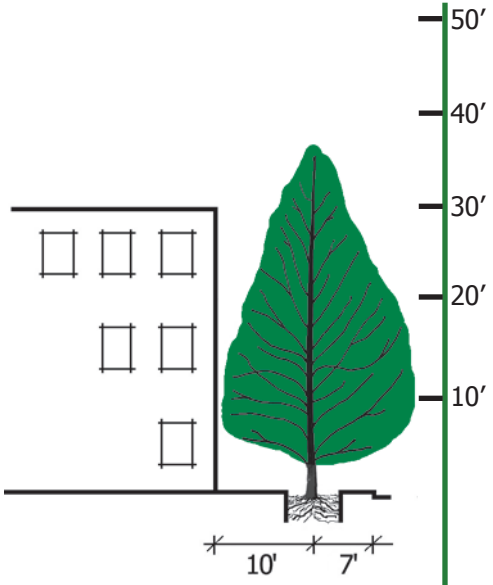
Uses: Street tree if ample room to grow
Specimen tree in parks and lawns

Maintenance Issues: May need to prune lower branches

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 25’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Ulmus 'Homestead'

also **'Pioneer'**
'Urban Elm'

Size at Maturity: Height: 40'-60'
Spread: 20'-30'

Growth Rate: Fast

Origin: Hybrid of *U. glabra* and *U. carpinifolia*

Hardiness Zone: 5

Culture: Best in full sun
Prefers moist, well-drained fertile soil
Easy to transplant

Appearance: Large upright tree with a wide crown

Liabilities: Strong winds can cause damage

Drought Tolerant: No

Insects or Diseases: Resistant to Dutch elm disease
Elm leaf beetle

Homestead Elm

Uses: Street tree if ample room to grow
Specimen tree in parks and lawns

Maintenance Issues: Twig drop may be messy

Best Planting Time: Spring or Fall

Minimum Recommended Distance from
Building: 10’
Street: 7’
Next Tree: 25’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’

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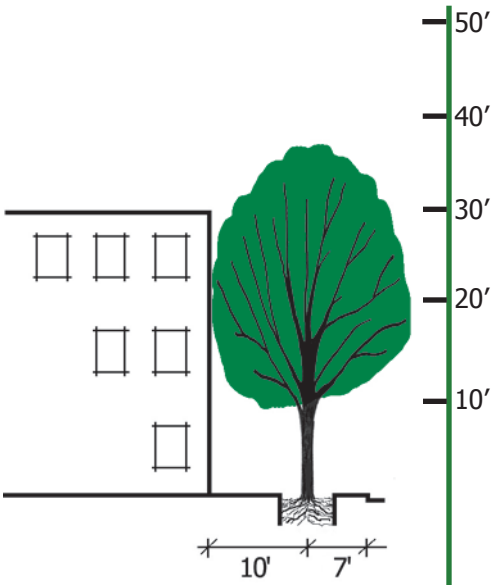


Ulmus parvifolia

Size at Maturity: Height: 45'-50'
Spread: 45'-50'

Growth Rate: Medium to Fast

Origin: Non-native (northern China, Japan and Korea)

Hardiness Zone: 5, 4 if in protected site

Culture: Full sun to light shade
Prefers moist, fertile, well-drained, deep soils
Easily transplanted

Appearance: Graceful, medium to large tree, upright branching
Attractive mottled bark

Liabilities: None

Drought Tolerant: No

Insects or Diseases: Few insect problems
Resistant to Dutch elm disease

Lacebark Elm

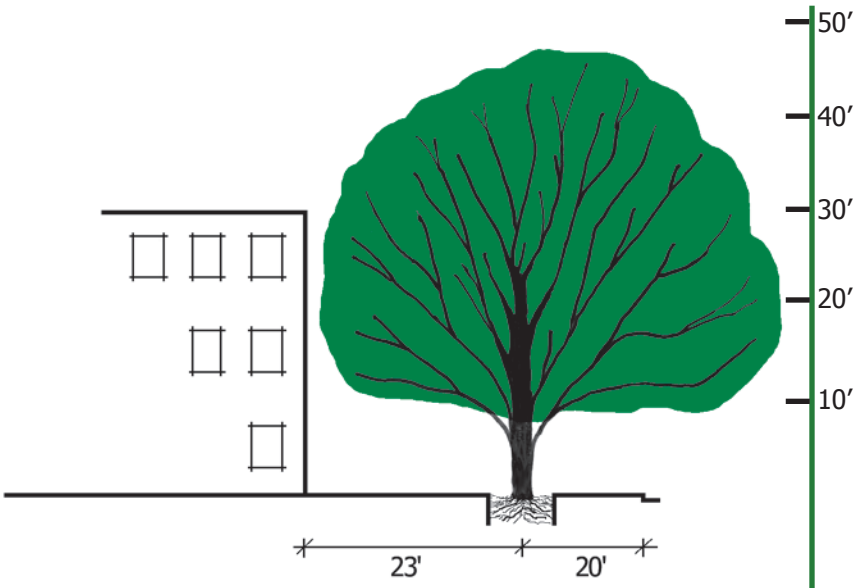
Uses: Street tree if ample room to spread
Specimen tree in parks and lawns

Maintenance Issues: Fruit drop may be messy

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 23’
Street: 20’
Next Tree: 50’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



Zelkova serrata

also **'Halka'** **'Village Green'**

Size at Maturity: Height: 50'-60'
Spread: 40'-50' ('Halka' 30')

Growth Rate: Medium to Fast

Origin: Non-native (Japan)

Hardiness Zone: 5

Culture: Full sun
Prefers well-drained, moist, deep soils
Easily transplanted

Appearance: Medium to large tree, upright branching

Liabilities: None

Drought Tolerant: Once established

Insects or Diseases: Japanese beetles may damage foliage
Good resistance to Dutch elm disease and bacterial canker

Japanese Zelkova

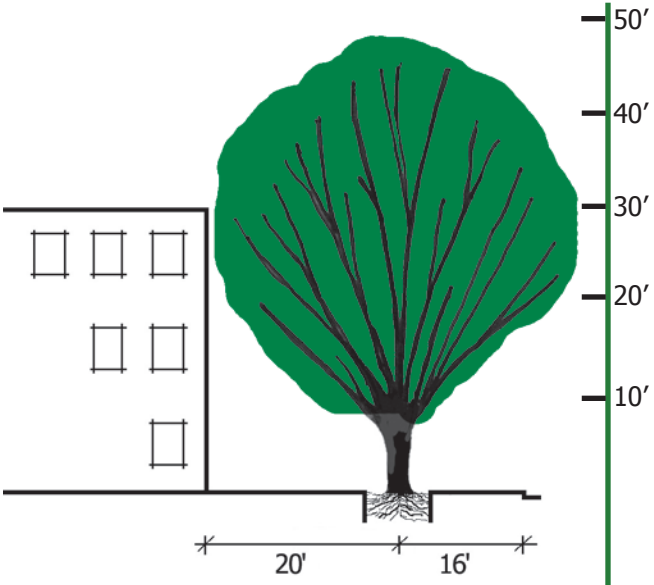
Uses: Street tree if room to spread
Specimen tree in parks and lawns

Maintenance Issues: Twig dieback in cold winters

Best Planting Time: Spring

Minimum Recommended Distance from
Building: 20’
Street: 16’
Next Tree: 45’

Minimum Recommended Tree Well: 160 cubic feet
6.5’ x 6.5’
4’ x 10’
5’ x 8’
6’ x 7’



OTHER INFORMATION 5

Trees Omitted from Manual

The primary goal of this manual is to provide a choice of trees that if used in the appropriate location would provide an attractive and valuable addition to the community. In arriving at this list, several trees that over the years have been used in urban planting were rejected for inclusion for various reasons. The following is a list of some of the omitted trees and the reason.

The following trees are **NOT** recommended:

***Acer platanoides,* Norway Maple**
Problem: Invasive; spreads into uncultivated areas and crowds out native species

***Acer saccharum,* Sugar Maple**
Problem: Although a wonderful addition to community plantings, it is too sensitive to road salts, heat, drought and soil compaction to be located close to roadways.

***Acer saccharinum,* Silver Maple**
Problem: Very brittle wood and easily damaged in wind storm

***Koelreuteria paniculata,* Goldenrain Tree**
Problem: Can become invasive if planted near open ground

***Pyrus calleryana 'Bradford',* Bradford Pear**
Problem: Very weak wooded and overly planted

***Tsuga canadensis,* Canadian Hemlock**
Problem: Susceptible to Wooly Adelgid

***Ulmus americana,* American Elm**
Problem: Susceptible to Dutch elm disease

Tolerant of Difficult Situations

Salt Tolerance:

The following species have been reported to show some tolerance to road salt

Acer campestre
Celtis occidentalis
Fraxinus pennsylvanica
Ginkgo biloba
Gleditsia triacanthos inermis
Pyrus calleryana
Quercus rubra
Quercus* x *shumardii
Sophora japonica
***Ulmus* 'Homestead'**
***Ulmus* 'Urban Elm'**
Zelkova serrata

Wet Soils:

The following species have been reported to show tolerance to wet soils

Acer rubrum
Fraxinum pennsylvanica
Gleditsia triacanthos inermis
Liquidambar styraciflua
***Platanus x acerifolia* 'Bloodgood'**
Quercus palustris
***Ulmus* 'Pioneer'**
***Ulmus* 'Homestead'**
***Ulmus* 'Urban Elm'**

Partial Shade:

The following species can adapt to sites receiving only 4-6 hours of sun

Acer campestre
Acer rubrum
Cercidiphyllum japonicum
Liquidambar styraciflua
Maackia amurensis
Ostrya virginiana
Styringa reticulata

References and Resources

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Dirr, M.A. 1998. *Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses*. Champaign, Illinois: Stipes Publishing LLC.

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Urban Horticulture Institute. 2003. *Recommended Urban Trees: Site Assessment and Tree Selection for Stress Tolerance.* Ithaca, New York: Cornell University Urban Horticulture Institute.

Other Resources:

Connecticut Urban Forest Council:
www.CTUrbanForestCouncil.org

University of Connecticut's Plant Database
www.hort.uconn.edu/plants/

Urban Horticulture Institute, Cornell University:
www.hort.cornell.edu/uhi/index.html

Connecticut Forest and Park Association
www.ctwoodlands.org

Connecticut Notable Trees
www.notabletrees.conncoll.edu


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