

# Street Trees



## Why Plant Trees Along the Street?

Trees provide a multitude of environmental, social and economic benefits that encourage the long term success of a community. Trees are low-cost infrastructure that help create a sense of space and create shelter in neighborhoods and business districts.

Trees improve public safety by contributing to the perception of quality of life and community investment. Many street trees stand between pedestrians and moving traffic, providing real and perceived safety from vehicles.

Trees improve the efficiency and lifespan of built infrastructure by providing shelter from the wind and sun. Shade from street trees can lower heating and cooling costs by 20-50% (USDA Forest Service). The concrete and asphalt on a shaded street has an average life span 60% longer than those left exposed to UV rays (WALC Institute).

## Planning for Street Trees

Trees come in all shapes and sizes, fitting the right species with the right planting site is critical in creating sustainable, functional streetscapes. There are many wonderful tree species that have a place in our towns, but not every species will work in every situation. We want trees to reach their mature size to provide the maximum benefits. If a site is too limiting for a large shade tree, then we should consider a medium size tree. Limiting factors such as soil volume, utility lines, lights, building signage, and awnings are important to consider when selecting the right tree.

## What is a Street Tree?

A street tree is any tree that stands within 15 to 20 feet of the edge of a road or parking lot, the space where public and private use blend. These trees provide many benefits to the street, streetside parking, sidewalk, and improve the aesthetics of the lane. Not all street trees sit in the right-of-way between sidewalk and road.

**Green infrastructure uses plants to solve problems in towns large and small.**

# Start with a Good Foundation

Soil questions to ask when selecting a tree:

- How much soil volume will be available to the tree? This is the most limiting factor to long-term tree health. Large shade trees need much more root space than medium trees, not just to remain healthy but to grow a stable, supportive root system.
  - A 5-6' wide planting area is ideal and can support a **large** or **medium** tree.
  - A 3-5' wide planting space can support a **medium** tree.
  - A planting space less than 3' wide is not ideal for a tree; consider grasses or perennials in this space.
- What type of soil is the planting area? Is it clay, sand or silt? Not all species grow well in heavy clay (look for wet tolerant species) or handle drying out in sandy soil (look for drought tolerant species).
- What is the quality of the soil? Trees don't do well when planted in construction foundation soil or road base. If necessary, soil should be replaced to a depth of 18" with 'living' soil (cemeteries can be a good source).



**Left:** Large maturing trees have a canopy that naturally starts above street signs and require less pruning to maintain visibility.

**Right:** Don't discount trees planted in the yard as street trees. Although they are growing on private property they provide significant shading to streets.



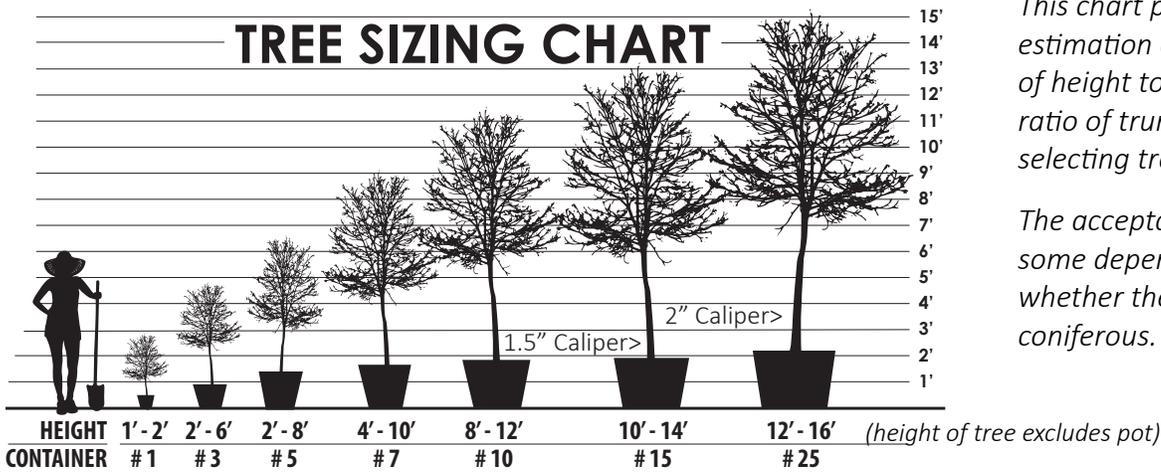
## Match Tree Size and Shape to the Site

Medium trees mature at about 25' tall and wide:

- They are ideal for sites where a sign is placed high on a building or under powerlines.
- Place them 1/2 the distance of the mature width away from light poles and awnings.
- Keep street and sidewalk clearance heights in mind; not all medium trees will grow tall enough to allow clearance pruning. Trees ideally need 2/3 of their height to be canopy and 1/3 to be trunk; at minimum 50:50.

Large trees mature at or above 40' tall with a variety of widths:

- They work well when signage is placed low on a building and can sit below the tree canopy.
- They provide plenty of room for street and sidewalk clearance and allow visibility of street signage.
- Upright species should only be used when site width is a limiting factor or a screening view is desired. They provide significantly less shade and can interfere with visibility of signage and at driveways.
- Evergreens branch closer to the ground than deciduous and are less tolerant of 'pruning up' for clearance. Place at least 1/2 the expected mature width from sidewalks, streets and buildings. They do offer more screening and wind protection and are often a key species in western Nebraska.



This chart provides a visual estimation of the ideal ratio of height to pot size and the ratio of trunk to canopy when selecting trees to purchase.

The acceptable ratio can vary some depending on species and whether the tree is deciduous or coniferous.

## Medium Trees (20-40 feet maximum mature height)

Western NE	Eastern NE	Common Name	Scientific Name	Full Sun	Part-Shade	Sand	Loam	Clay	Wet	Average	DRY	Drought	Compaction	Mature Height	Mature width
W		bigtooth maple	<i>Acer grandidentatum</i>	☐	☐	✓	✓	✓		●		✗		30'	20'
W	E	State Street miyabe maple	<i>Acer miyabei</i>	☐	☐	✓	✓	✓		●				30'	25'
W		boxelder maple	<i>Acer negundo</i>	☐	☐	✓	✓	✓	●	●	●	✓	✓	40'	30'
	E	three-flower maple	<i>Acer triflorum</i>	☐	☐	✓	✓	✓		●				20'	15'
	E	yellow buckeye	<i>Aesculus flava</i>	☐		✓	✓			●		✗	✗	40'	30'
W	E	ohio buckeye	<i>Aesculus glabra</i>	☐		✓	✓	✓		●	●	✓	✗	30'	30'
	E	columnar european hornbeam	<i>Carpinus betulus</i>	☐	☐				●	●				35'	15'
	E	chinese chestnut	<i>Castanea mollissima</i>	☐		✓	✓	✓		●		✗	✗	35'	30'
	E	yellowwood	<i>Cladrastis kentukea</i>	☐	☐	✓	✓	✓		●		✓	✗	35'	35'
	E	turkish filbert	<i>Corylus colurna</i>	☐		✓	✓			●		✓	✗	40'	35'
	E	european beech	<i>Fagus sylvatica</i>	☐	☐	✓	✓	✓	●	●				35'	25'
W	E	Moraine sweet gum	<i>Liquidambar styraciflua</i>	☐		✓	✓	✓	●	●		✗		40'	35'
	E	osage orange	<i>Maclura pomifera</i>	☐						●	●	✓	✗	35'	30'
	E	saucer magnolia	<i>Magnolia x soulangiana</i>	☐		✓	✓	✓		●		✗		30'	25'
	E	black gum	<i>Nyssa sylvatica</i>	☐	☐	✓	✓	✓	●	●				30'	25'
	E	bigtooth aspen	<i>Populus grandidentata</i>	☐	☐		✓	✓	●	●				35'	25'
W	E	quaking aspen	<i>Populus tremuloides</i>	☐	☐		✓	✓	●	●				30'	25'
W	E	bur-gambel oak	<i>Quercus gambelii x macrocarpa</i>	☐						●	●			30'	30'
W		upright english oak	<i>Quercus robur fastigata</i>	☐			✓							40'	15'
W		japanese pagodatree	<i>Styphnolobium japonicum</i>	☐	☐	✓	✓			●		✓		35'	35'
	E	japanese tree lilac	<i>Syringa reticulata</i>	☐	☐		✓			●	●	✓		30'	15'
W	E	hybrid crabapple*	<i>Malus hybrid</i>	☐	☐	✓	✓	✓		●	●	✓	✓	*	
W	E	sucker punch chokecherry	<i>Prunus virginiana 'Canada Red'</i>	☐	☐	✓	✓	✓		●	●	✓	✓	30'	30'

\*many forms, look for persistent fruiting



# Large Trees (40 feet and over maximum mature height)

Western NE	Eastern NE	Common Name	Scientific Name	Full Sun	Part-Shade	Sand	Loam	Clay	Wet	Average	Dry	Drought	Compaction	Mature Height	Mature width
	E	black maple	<i>Acer nigrum</i>	☐	☐	✓	✓	✓		●		☑		60'	60'
	E	red maple*	<i>Acer rubrum</i>	☐		✓	✓	✓	●	●	●	☒	☑	70'	60'
	E	sugar maple*	<i>Acer saccharum</i>	☐	☐	✓	✓			●		☑	☒	60'	50'
	E	bitternut hickory*	<i>Carya cordiformis</i>	☐	☐	✓	✓	✓	●	●		☑	☒	70'	60'
	E	pecan	<i>Carya illinoensis</i>	☐	☐	✓	✓	✓	●	●	●		☒	50'	50'
	E	shellbark hickory	<i>Carya lacinososa</i>		☐	✓	✓		●	●		☒	☒	40'	35'
	E	shagbark hickory	<i>Carya ovata</i>	☐	☐	✓	✓	✓		●	●	☑	☒	50'	45'
W	E	northern catalpa	<i>Catalpa speciosa</i>	☐	☐	✓	✓	✓		●	●	☑	☒	50'	35'
W	E	hackberry	<i>Celtis occidentalis</i>	☐		✓	✓	✓	●	●	●	☑		50'	50'
	E	ginkgo	<i>Ginkgo biloba</i>	☐		✓	✓	✓		●			☒	45'	35'
W	E	honeylocust**	<i>Gleditsia triacanthos</i>	☐		✓	✓	✓	●	●	●	☑	☒		
W	E	kentucky coffeetree	<i>Gymnocladus dioicus</i>	☐		✓	✓	✓	●	●	●	☑	☒	50'	45'
W	E	black walnut	<i>Juglans nigra</i>	☐		✓	✓	✓	●	●	●	☑		60'	45'
	E	tulip tree	<i>Liriodendron tulipifera</i>	☐		✓	✓	✓		●		☒		60'	45'
W		austrian pine	<i>Pinus nigra</i>	☐		✓	✓	✓			●			50'	30'
W	E	ponderosa pine	<i>Pinus ponderosa</i>	☐		✓	✓	✓			●	☑		65'	30'
	E	eastern white pine	<i>Pinus strobus</i>	☐	☐					●		☒		50'	30'
W	E	sycamore*	<i>Platanus occidentalis</i>	☐	☐	✓	✓	✓		●	●	☑		80'	60'
	E	london planetree*	<i>Platanus x acerifolia</i>	☐						●				80'	60'
W	E	eastern cottonwood*	<i>Populus deltoides</i>	☐					●	●	●	☑		80'	60'
W	E	black cherry	<i>Prunus serotina</i>	☐	☐		✓			●	●		☒	45'	35'
	E	white oak	<i>Quercus alba</i>	☐			✓	✓		●				60'	50'
	E	swamp white oak	<i>Quercus bicolor</i>	☐					●	●		☑	☑	60'	60'
		buckley oak	<i>Quercus buckleyi</i>	☐	☐					●	●			40'	35'
	E	scarlet oak	<i>Quercus coccinea</i>	☐		✓	✓	✓		●				60'	40'
	E	hill's oak	<i>Quercus ellipsoidalis</i>	☐						●				50'	35'
	E	shingle oak	<i>Quercus imbricaria</i>	☐			✓	✓		●				45'	35'
W	E	bur oak	<i>Quercus macrocarpa</i>	☐	☐	✓	✓	✓		●		☑		60'	60'
W		mongolian oak	<i>Quercus mongolica</i>	☐			✓	✓		●	●	☑		50'	40'
	E	chestnut oak	<i>Quercus montana</i>	☐		✓	✓			●	●			50'	35'
W	E	chinkapin oak	<i>Quercus muehlenbergii</i>	☐		✓	✓	✓		●	●	☑		50'	40'
W	E	english oak	<i>Quercus robur</i>	☐			✓			●				many forms	
	E	red oak	<i>Quercus rubra</i>	☐		✓	✓	✓		●	●	☑		60'	40'
	E	shumard oak	<i>Quercus shumardii</i>	☐			✓			●		☑		45'	40'
	E	black oak	<i>Quercus velutina</i>	☐	☐					●	●	☑	☒	50'	45'
	E	bald cypress*	<i>Taxodium distichum</i>	☐	☐	✓	✓	✓		●		☑		50'	30'
W	E	american linden	<i>Tilia americana</i>	☐	☐	✓	✓	✓		●				60'	40'
W	E	littleleaf linden	<i>Tilia cordata</i>	☐	☐	✓	✓	✓	●	●				60'	40'
	E	silver linden	<i>Tilia tomentosa</i>	☐	☐	✓	✓	✓		●				50'	40'
W	E	Accolade elm	<i>Ulmus 'Morton'</i>	☐			✓		●	●			☒	50'	40'
W	E	Frontier elm	<i>Ulmus 'Frontier'</i>	☐			✓			●	●	☑	☒	40'	30'
W	E	New Horizon	<i>Ulmus 'New Horizon'</i>	☐			✓		●	●				50'	30'
W	E	Pioneer elm	<i>Ulmus 'Pioneer'</i>	☐			✓		●	●	●	☑	☒	50'	50'
W	E	Triumph elm	<i>Ulmus 'Morton Glossy'</i>	☐	☐		✓		●	●	●	☑		60'	40'
W	E	Vanguard elm	<i>Ulmus Morton Plainsman'</i>	☐			✓			●	●			50'	45'
W	E	Princeton elm	<i>Ulmus americana Princeton'</i>											60'	40'

\*need a minimum 8' wide root space

\*\* look for Northern Acclaim, Imperial, Shademaster, Skyline