Tree List and Planting Guidelines

Developed by the Tree Warden and the Public Shade Tree Commission

City of Northampton, Massachusetts

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ABOUT THE PARTNERS

The Northampton Tree Warden is a Mayor-appointed position in Northampton's Department of Public Works charged with carrying out the duties of Massachusetts General Law 87 and city ordinances pertaining to shade trees.

The Northampton Public Shade Tree Commission preserves, protects, and promotes public shade trees, and serves to advise and assist the Tree Warden and Mayor in:

- Researching and developing plans, programs and policies for achieving a tree canopy that supports Northampton's goals of public health, beautification, economic & environmental sustainability, and resilience in the face of climate change
- Reviewing and making recommendations on ordinance and zoning regulations related to trees
- Receiving and reviewing input from city residents, businesses, and neighborhoods on issues or concerns related to trees
- Making planting and maintenance recommendations guided by industry best practices
- Working to promote knowledge and awareness of the benefits of an actively managed urban forest

Tree Northampton, Inc. is a private citizens group promoting ecological stewardship of Northampton through education, advocacy, and volunteer participation. Tree Northampton volunteers support the City's tree program by planting and caring for trees all around the city.

Acknowledgements
We are grateful to the Vermont Urban and Community Forestry Program and University of Vermont Extension for creating the Vermont Tree Selection Guide. As Northampton shares some climatic traits with Vermont, we have borrowed extensively from that guide in the creation of this document.

Special thanks to Alicia Purdy for graphic design, and to Jen Werner, Jay Girard, and Molly Hale for additional content.

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HOW TO USE THIS GUIDE

STEP 1: Think about the overall size of tree you would like to plant. Look at the Northampton Recommended Tree Charts to view the possibilities in your size range. See pages 4-8.

STEP 2: Go to page 9 and fill out the Tree Selection Worksheet. This will help you determine if site conditions match your tree selection.

STEP 3: Get more information on your chosen tree species on pages 13 to 30. Determine if your selected tree fits with your site conditions.

STEP 4: Plant a tree species that will fit the space and thrive at your site for many years to come!

Thank you for choosing wisely....RIGHT PLANT, RIGHT PLACE!

SMALL RECOMMENDED TREES

Common Name	Scientific Name	Tree Details	Notes
Trident Maple	Acer buergerianum	p. 29	Currently over-planted, limit planting
Hedge Maple	Acer campestre	p. 13	Currently over-planted, limit planting
Paperbark Maple	Acer griseum	p. 13	Currently over-planted, limit planting
Purpleblow Maple	Acer truncatum	p. 14	Currently over-planted, limit planting
Downy Serviceberry	Amelanchier arborea	p. 15	
Allegheny Serviceberry	Amelanchier laevis	p. 15	
Shadblow Serviceberry	Amelanchier canadensis	p. 15	
Apple Serviceberry	Amelanchier x grandiflora	p. 15	
Smoketree	Cotinus obovatus	p. 29	Shrubby multi-stem tree form
Redbud	Cercis canadensis	p. 17	
Cornelian Cherry Dogwood	Cornus mas	p. 17	
Korean Dogwood	Cornus kousa	p. 29	
Thornless Cockspur Hawthorn	Crateagus crusgalli var. inermis	p. 29	
English Hawthorn	Crateagus laevigata	p. 18	
Washington Hawthorn	Crateagus phaenopyrum	p. 18	
‘Ohio Pioneer’ Hawthorn	Crateagus punctata	p. 29	
Winter King Hawthorn	Crateagus viridis	p. 18	
Panicle Hydrangea	Hydrangea paniculata	p. 20	Shrubby multi-stem tree form
Star Magnolia	Magnolia stellata	p. 21	
Sargent Crabapple	Malus sargentii	p. 21	
Crabapple cultivars	Malus spp. (many cultivars)	pp. 21-22	
Japanese Tree Lilac	Syringa reticulata	p. 25	
Blackhaw Viburnum	Viburnum prunifolium	p. 28	

MEDIUM RECOMMENDED TREES

Common Name	Scientific Name	Tree Details	Notes
Miyabe Maple	Acer miyabei	p. 13	Currently over-planted, limit planting
Red Horsechestnut	Aesculus x carnea	p. 14	
Europen Hornbeam	Carpinus betulus	p. 16	
American Hornbeam	Carpinus caroliniana	p. 16	
Yellowwood	Cladrastis kentukea (lutea)	p. 17	
Turkish Filbert	Corylus colurna	p. 17	
Hardy Rubber Tree	Eucommia ulmoides	p. 29	
Carolina Silverbell	Halesia carolina	p. 20	
Witchhazel	Hamamelis virginiana	p. 20	Not a street tree
Eastern Red Cedar	Juniperus virginiana	p. 20	
Amur Maackia	Maackia amurensis	p. 21	
American Hophornbeam	Ostrya virginiana	p. 22	
Amur Chokecherry	Prunus maackii	p. 24	
Sargent Cherry	Prunus sargentii	p. 24	
Accolade Flowering Cherry	Prunus sargentii x P. subhirtella	p. 24	
Callery Pear	Pyrus calleryana	p. 24	
Ussurian Pear	Pyrus ussuriensis	p. 24	
Korean Mountain-Ash	Sorbus alnifolia	p. 29	
White Cedar	Thuja occidentalis	p. 26	
Japanese Zelkova	Zelkova serrata	p. 28	

LARGE RECOMMENDED TREES

Common Name	Scientific Name	Tree Details	Notes
White Fir	Abies concolor	p. 13	Not a street tree
Fraser Fir	Abies fraseri	p. 13	Not a street tree
Freeman Maple	Acer x freemanii	p. 13	Currently over-planted, limit planting
Red Maple	Acer rubrum	pp. 13-14	Currently over-planted, limit planting
Sugar Maple	Acer saccharum	p. 14	Currently over-planted, limit planting, Not a street tree
Horsechestnut	Aesculus hippocastanum	p. 15	
River Birch	Betula nigra	pp. 15-16	
Pignut Hickory	Carya glabra	p. 16	
Shagbark Hickory	Carya ovata	p. 16	
Northern Catalpa	Catalpa speciosa	p. 16	
Sugar Hackberry	Celtis laevigata	p. 16	
Common Hackberry	Celtis occidentalis	p. 16	
'Magnifica' Sugar Hackberry	C. occidentalis x C. laevigata 'Magnifica'	p. 17	
Katsuratree	Cercidphyllum japonicum	p. 17	
European Beech	Fagus sylvatica 'Riversii'	p. 18	Not a street tree
Ginkgo	Ginkgo biloba	p. 19	Male only
Honey Locust	Gleditsia triacanthos var. inermis	p. 19	
Kentucky Coffeetree	Gymnocladus dioicus	p. 20	
Black Walnut	Juglans nigra	p. 20	
Larch	Larix decidua	p. 20	
American Sweetgum	Liquidambar styraciflua	p. 20	
Tuliptree	Liriodendron tulipfera	p. 21	
Dawn Redwood	Metasequoia glyptostroboides	p. 22	Not a street tree
Black Tupelo	Nyssa sylvatica	p. 22	

LARGE RECOMMENDED TREES, CONT.

Common Name	Scientific Name	Tree Details	Notes
Amur Corktree	Phellodendron amurense	p. 23	Male only
Norway Spruce	Picea abies	p. 23	Not a street tree
White Spruce	Picea glauca	p. 23	Not a street tree
Serbian Spruce	Picea omorika	p. 23	Not a street tree
Oriental Spruce	Picea orientalis	p. 23	Not a street tree
Swiss Stone Pine	Pinus cembra	p. 23	Not a street tree
Austrian Pine	Pinus nigra	p. 23	Not a street tree
Eastern White Pine	Pinus strobus	p. 23	Not a street tree
London Planetree	Platanus x acerifolia	p. 23	
American Sycamore	Platanus occidentalis	p. 24	
Sawtooth Oak	Quercus acutissima	p. 29	
White Oak	Quercus alba	p. 24	
Swamp White Oak	Quercus bicolor	p. 24	
Scarlet Oak	Quercus coccinea	p. 29	
Shingle Oak	Quercus imbricaria	p. 24	
Bur Oak	Quercus macrocarpa	p. 25	
Chinkapin Oak	Quercus muehlenbergii	p. 25	
Pin Oak	Quercus palustrus	p. 25	
Willow Oak	Quercus phellos	p. 29	
English Oak	Quercus robur	p. 25	
Red Oak	Quercus rubra	p. 25	
Sassafras	Sassafras albidum	p. 25	

LARGE RECOMMENDED TREES, CONT.

Common Name	Scientific Name	Tree Details	Notes
Scholar-tree	Styphnolobium japonicum	p. 25	
Baldcypress	Taxodium distichum	p. 26	
American Linden, Basswood	Tilia americana	p. 26	
Littleleaf Linden	Tilia cordata	p. 26	
Crimean Linden	Tilia x euchlora	p. 27	
Silver Linden	Tilia tomentosa	p. 27	
Chinese Hemlock	Tsuga chinensis	p. 29	Not a street tree
American Elm (cultivars listed have various degrees of resistance to Dutch Elm Disease)	Ulmus americana 'Colonial Spirit'	p. 30	
	Ulmus americana 'Creole Queen'	p. 30	
	Ulmus americana 'Jefferson'	p. 27	
	Ulmus americana 'New Harmony'	p. 27	
	Ulmus americana 'Prairie Expedition'	p. 30	
	Ulmus americana 'Princeton'	p. 27	
	Ulmus americana 'St Croix'	p. 30	
	Ulmus americana 'Valley Forge'	p. 27	
Elm Hybrid	Ulmus 'Frontier' (hybrid)	p. 27	
Lacebark Elm	Ulmus parvifolia	p. 30	

Developed and reviewed May 2017. Updated May 2018.
This list will be subject to periodic review and edited as needed.

Tree Selection Worksheet

Complete the following worksheet to help identify appropriate trees for the site.

Tree Site & Space

Site location/Description: _____

Desired mature height: _____ Desired mature spread: _____

Desired Tree Characteristics

Form

☐ Spreading ☐ Columnar ☐ Round

☐ Upright Oval ☐ Pyramidal ☐ Vase

Hardiness Zone

☐ 5a (-15° to -20°) ☐ 4b (-20° to -25°) ☐ 4a (-25° to -30°) ☐ 3b (-30° to -35°)

Does Well In

☐ Drought ☐ Poor Drainage ☐ Alkaline Soil ☐ Salt ☐ Shade ☐ Air Pollution

Features of Interest

☐ Flowers ☐ Fruits ☐ Wildlife ☐ Fall Foliage ☐ Winter Interest

☐ Native to VT ☐ Evergreen ☐ Fits Under Power Lines

Rooting Space

☐ **Small**
Planting sites with limited soil volume, such as narrow greenbelts and pits less than 6 feet wide. Depths should be 3 feet. Planting should not occur in less than 4 by 4 feet spaces.

☐ **Medium**
Planting sites with an intermediate amount of soil volume. Green belts greater than 6 feet wide, but still limited in the amount of below ground growing space.

☐ **Large**
Planting that are large soil volume such as parks and open space.

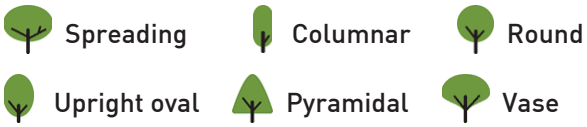
Note: On the tree species list, the smallest planting rooting space is listed.

TREE SPECIES DETAILS:

Sizes, Shapes,
Site Conditions, Features

Key to Tree Species List

Form. Indicates the natural shape of the tree.



Tolerances. Indicates the species ability to withstand drought, poor drainage, alkaline soil, salt, air pollution and shade.

Mature. The total height of a typical species at maturity.

Crown Spread. The total width of a typical species crown at maturity.

Rooting Space. Lists the recommended soil volume for the species/cultivar assuming a square area that is 3 feet deep (e.g. 25' corresponds to a volume of 25'x25'x3'). Rooting space is calculated by taking half of a trees mature crown spread.

Planting Area

Small Indicates planting sites with limited soil volume, such as narrow greenbelts and pits less than 6 feet wide. Depths should be 3 feet. Planting should not occur in less than 4 by 4 feet spaces.

Medium Indicates planting sites with an intermediate amount of soil volume. Green belts greater than 6 feet wide, but still limited in the amount of below ground growing space.

Large Indicates planting that are large soil volume such as parks and open space.

Hardiness. The lowest zone rating for each species.

2a -45° to -50°
2b -40° to -45°
3a -35° to -40°
3b -30° to -35°
4a -25° to -30°
4b -20° to -25°
5a -15° to -20°

Limitations. Problems you might encounter with a specific tree planted in Vermont.

1. Weak wood and/or branch structure making it susceptible to breakage during ice or snow accumulation and strong winds.
2. Fruit and/or leaves can be a litter problem.
3. Sensitive to insect/disease pests.
4. Limited availability, making it different to locate at local nurseries.
5. Prone to excessive sucker growth from roots or lower stem and may require regular pruning.
6. Indicates tree should be planted only during the spring.

Features. Indicates which species and cultivars have the following features.

Flower Indicates which species have notable flowers.

Fruit Indicates which species have notable fruits.

Fall Foliage Indicates which species have notable fall foliage.

Winter Interest Indicates which species have notable winter interest.

Native to Vermont Indicates which species that are inherent and original to New England.

Under Power Lines Indicates which species can be planted underneath power lines (←25 ft. in height).

Invasive Alert Indicates which species should be kept under cultivation & not planted in a wild environment.

Evergreen Indicates which species have evergreen leaves or needles.

Wildlife Refers to whether a tree's fruit has wildlife value.

Key to Scientific Names

Common Name	Scientific Name
Amur Corktree	*Phellodendron*
Apple	*Malus*
Ash	*Fraxinus*
Baldcypress	*Taxodium*
Beech	*Fagus*
Birch	*Betula*
Black Gum, Tupelo	*Nyssa*
Buckeye, horeschestnut	*Aesculus*
Cedar	*Thuja*
Cherry	*Prunus*
Dawn Redwood	*Metasequoia*
Dogwood	*Cornus*
Elm	*Ulmus*
Filbert, Hazel	*Corylus*
Fir	*Abies*
Fringetree	*Chionanthus*
Hackberry	*Celtis*
Hawthorn	*Crataegus*
Hemlock	*Tsuga*
Hickory	*Carya*
Honeylocust	*Gleditsia*
Hophornbeam	*Ostrya*
Katsura	*Cercidiphyllum*
Kentucky Coffeetree	*Gymnocladus*
Lilac	*Syringa*
Linden	*Tilia*
Maple	*Acer*
Musclewood, Ironwood	*Carpinus*
Oak	*Quercus*
Pear	*Pyrus*
Pine	*Pinus*
Redbud	*Cercis*
Shadbush, Serviceberry	*Amelanchier*
Silverbell	*Halesia*
Spruce	*Picea*
Sycamore, Planetree	*Plantanus*
Walnut	*Juglans*
Witchhazel	*Hamamellis*
Yellowwood	*Cladrastis*

BUYING A TREE

Purchasing a tree is an investment. Like buying a car, you'll want to inspect the trees at the nursery to ensure you are purchasing the highest quality. The quality of the planting stock you purchase is one of the most important factors when it comes to survival and long-term health of new trees. High quality trees will establish themselves more quickly than less healthy trees and require less pruning and maintenance in subsequent years.

Checklist for purchasing a tree

- Purchase stock from a reputable nursery. For a list of nurseries affiliated with GreenWorks - Vermont Nursery and Landscape Association go to greenworksvermont.org/members/
- Select the appropriate stock for your planting needs: Bare root, container or balled and Burlapped (B&B)
- Inspect the roots.
- Inspect the trunk for signs of damage or weakness in the bark.
- Inspect the crown for a leader.

Visit https://mnla.site-ym.com, the Massachusettes Nursery and Landscape Association, to search for businesses with the highest standards in the nursery and landscape industry.

TREE SPECIES LIST

Scientific Name	Cultivar	Common Name [Flower Color]	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
Abies concolor	—	**White Fir**		3a	50	25	15	L							6	
Specimen tree. Most tolerant fir and good replacement for disease sensitive Colorado blue spruce.																
Abies fraseri	—	**Fraser Fir**		4a	40	25	15	L							6	
Specimen or accent tree. Avoid hot and dry conditions, and high pH.																
Acer campestre	—	**Hedge Maple**		5	30	30	15	S								
Possibly a zone 4. Extremely adaptable and tolerates severe pruning. Prune early for structure and may need to be limbed up for clearance. Slow grower. Primary host of Asian Longhorned Beetle.																
Acer x freemanii	'Armstrong'	**Freeman Maple**		4a	60	20	20	M							1,6	
Fastigiate. Cross between a red and silver maple. Fast grower, early structural pruning needed. Primary host of Asian Longhorned Beetle.																
A. x freemanii	Autumn Blaze® 'Jeffersred'	**Freeman Maple**		4a	50	40	20	M							1,6	
Cross between a red and silver maple. Fast grower, early structural pruning needed, concern over branch breakage as it ages. Excellent orange to red fall color. Primary host of Asian Longhorned Beetle.																
A. x freemanii	'Sienna'	**Freeman Maple**		4a	40	40	20	M							1,6	
Cross between a red and silver maple. Strong central leader for species, early structural pruning needed. Deep orange to red fall color. Primary host of Asian Longhorned Beetle.																
A. x freemanii	'Red Pointe'	**Freeman Maple**		4a	45	30	20	L							1,6	
Cross between a red (75%) and silver (25%) maple. Early structural pruning needed. Excellent fall red color and heat tolerance. Primary host of Asian Longhorned Beetle.																
Acer griseum	'Ginzam' Gingerbread™	**Paperbark Maple**		5	25	25	13	S							4,6	
Specimen tree. Potentially zone 4 in protected sites. Trifoliate leaves and beautiful peeling bark. Finer bark and faster growth than species. Primary host of Asian Longhorned Beetle.																
Acer miyabei	'Morton' State Street™	**Miyabe Maple**		4	40	40	20	S							4	
Specimen tree. More cold hardy alternative to A. Campestre. Corky bark. Primary host of Asian Longhorned Beetle.																
Acer rubrum	—	**Red Maple**		3	75	40	20	M							1,6	
Fast grower and easy to transplant Chlorosis can occur in alkaline soils. Somewhat weakened wooded, prune for structure. Thin bark can easily be damages. Fall color and intensity varies. Primary host of Asian Longhorned Beetle.																
A. rubrum	'Autumn Flame'	**Red Maple**		3b	50	30	20	M							1,6	
Excellent and early red fall color that last longer than species. Notable for its young round habit. Primary host of Asian Longhorned Beetle.																
A. rubrum	'Bowhall'	**Red Maple**		4	50	15	20	M							1,6	
Upright form with broad columnar head. Yellow to red fall color. Primary host of Asian Longhorned Beetle.																

Scientific Name	Cultivar	Common Name [Flower Color]	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
A. rubrum	Northwood®	**Red Maple**		3b	50	35	20	M							1,6	
Selected for tolerance to harsh winter conditions. Orange to red fall color. Branches ascent upward. Primary host of Asian Longhorned Beetle.																
A. rubrum	October Glory®	**Red Maple**		5a	50	35	20	M							1,6	
Dependable orange to red fall color which starts later than others. Dark green summer leaves. Limitations due to cold hardiness. Primary host of Asian Longhorned Beetle.																
A. rubrum	'Red Sunset'	**Red Maple**		4b	50	40	20	M							1,6	
Dependable orange to red fall color. Colors earlier than October Glory and more cold tolerant. Primary host of Asian Longhorned Beetle.																
Acer saccharinum	—	**Silver Maple**		3	70	50	35	L							1,5	
Fast grower, with fairly weak wood. Shallow rooting system can cause sidewalk damage and can clog drain pipes. Useful for wet areas . Transplants well.																
Acer saccharum	—	**Sugar Maple**		3	75	50	25	M								
Does not perform well in tight, compacted situations. Primary host of Asian Longhorned Beetle.																
A. saccharum	'Bonfire'	**Sugar Maple**		3	65	50	25	M								
Does not perform well in tight, compacted situations. Orange to red fall color. Primary host of Asian Longhorned Beetle.																
A. saccharum	Fall Fiesta®	**Sugar Maple**		3	75	50	25	M								
Does not perform well in tight, compacted situations. Fast grower. Yellow, orange and red fall color. Primary host of Asian Longhorned Beetle.																
A. saccharum	Green Mountain®	**Sugar Maple**		3	70	45	25	M								
Dark green summer foliage. Variable. Performs better than species in dry, tight conditions. Primary host of Asian Longhorned Beetle.																
A. saccharum	'Legacy'	**Sugar Maple**		3	50	35	25	M								
Red to orange fall color, dark, lustrous summer leaves. Performs better than species in dry, tight conditions. Primary host of Asian Longhorned Beetle.																
Acer triflorum	—	**Three-flower Maple**		5	30	30	15	M							4	
Specimen tree. Primary host of Asian Longhorned Beetle.																
Acer truncatum	—	**Purpleblow Maple**		4	25	30	15	S							4	
Adaptable and hardy. Future selection, 'Main Street.' Primary host of Asian Longhorned Beetle.																
Aesculus x carnea	'Briotii'	**Ruby Red Horsechestnut**(RED)		5a	40	40	20	M							2,6	
Specimen tree. Sometimes listed as zone 4. Primary host of Asian Longhorned Beetle.																

Scientific Name	Cultivar	Common Name [Flower Color]	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
Aesculus glabra	—	**Ohio Buckeye** (YELLOW)		3	60	40	20	L							2,3 4,6	
Reserve for large areas. Can be messy with little ornamental value. Primary host of Asian Longhorned Beetle.																
Aesculus hippocastanum	'Baumanii'	**Horsechestnut** (WHITE)		4a	75	70	35	L							1,3,6	
Double white flowers and fruitless. Prune in spring, avoid extremely dry condition. Leaf scorch, leaf blotch and powdery mildew can be a problem. Primary host of Asian Longhorned Beetle.																
Amelanchier arborea	'JFS-Arb' Spring Flurry®	**Downy Serviceberry** (WHITE)		4	35	20	10	S								
Not reliable under high stress conditions. Good tree form. Orange fall color.																
Amelanchier laevis	'Snowcloud', 'Majestic'	**Allegheny Serviceberry** (WHITE)		4	25	15	10	S								
Not reliable under high stress conditions. Fastigiate form. Scarlet fall color. Vigorous grower.																
Amelanchier canadensis	'Trazam' Traditional®	**Shadblow Serviceberry** (WHITE)		3	30	20	10	S							5	
Not reliable under high stress conditions. Strong central leader and good branch habit. Orange fall color. Heavy fruiting.																
A. canadensis	'Sprizam' Spring Glory®	**Shadblow Serviceberry** (WHITE)		3	12	10	10	S							5	
Not reliable under high stress. Small compact form. Orange to yellow fall color.																
Amelanchier x grandiflora	'Autumn Brilliance'	**Apple Serviceberry** (WHITE)		4a	25	25	13	S							3	
Not reliable under high stress conditions. Red fall color.																
A. grandiflora	'Autumn Sunset'	**Apple Serviceberry** (WHITE)		4a	30	25	13	S							3	
Not reliable under high stress conditions. Rich orange fall color. Strong central leader. Perhaps better drought tolerance.																
A. grandiflora	'Ballerina'	**Apple Serviceberry** (WHITE)		4a	20	15	13	S							3	
Not reliable under high stress conditions. Shrub or small tree. Red fall color.																
A. grandiflora	'Princess Diana'	**Apple Serviceberry** (WHITE)		4a	25	15	13	S							3	
Not reliable under high stress conditions. Red fall color. Can be multi or single stemmed.																
Betula nigra	'Moonshine' Dura Heat®	**River Birch**		4a	45	35	18	S							1,6	
Exfoliating bark. Develops chlorosis in high pH. Leaf spot in wet years. Most adaptable birch.																
B. nigra	'Little King' Fow Valley®	**River Birch**		4a	15	15	10	S							1,6	
Exfoliating bark. Develops chlorosis in high pH. Leaf spot in wet years. Most adaptable birch. Small form.																

Scientific Name	Cultivar	Common Name [Flower Color]	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
B. nigra	'Cully' Heritage®	**River Birch**		4a	50	35	18	S							1,6	
Exfoliating bark. Develops chlorosis in high pH. Leaf spot in wet years. Most adaptable birch.																
B. nigra	'Dickinson' Northern Tribute™	**River Birch**		3	40	35	18	S							1,6	
Exfoliating bark. Develops chlorosis in high pH. Leaf spot in wet years. Most adaptable birch.																
Carpinus betulus	'Fastigiata'	**European Hornbeam**		5a	35	20	10	S							4,6	
Cultivar name misleading as plant develops oval shape. Tolerates heavy pruning. Urban tolerant. Good for screens, hedges, groupings, planter boxes, around buildings.																
Carpinus caroliniana	—	**American Hornbeam**		3a	30	25	13	S							4,6	
Slow to recover from transplanting. Tolerates pruning for hedge or screen.																
C. caroliniana	'JN Globe' Ball O' Fire™	**American Hornbeam**		3a	30	25	10	S							4,6	
Slow to recover from transplanting. Red fall color. Tolerates pruning for hedge or screen.																
C. caroliniana	'JN Upright' Firespire™	**American Hornbeam**		3	30	15	10	S							4,6	
Slow to recover from transplanting. Orange to red fall color. Tolerates pruning for hedge or screen.																
C. caroliniana	'CCSQU' Palisade™	**American Hornbeam**		3a	30	15	10	S							4,6	
Slow to recover from transplanting. Yellow fall color. Tolerates pruning for hedge or screen.																
Carya glabra	—	**Pignut Hickory**		4	65	40	20	L							2,4,6	
Golden yellow fall color. Difficult to transplant.																
Carya ovata	—	**Shagbark Hickory**		4	80	35	28	L							2,4,6	
Yellow to brown fall color. Difficult to transplant. Beautiful 'shaggy' bark.																
Catalpa speciosa	—	**Northern Catalpa [WHITE]**		4a	60	40	20	L							2,4	
Coarse large leaves. Tough tree for large landscapes.																
Celtis laevigata	'All Seasons'	**Sugar Hackberry**		5a	80	50	25	M							1,6	
Smooth gray bark like beech. Yellow fall color. Good tolerance to tough conditions. Does respond well to injury.																
Celtis occidentalis	—	**Common Hackberry**		3a	60	50	25	M							1,6	
Good tolerance to tough conditions. Affected by several pests that do not kill the tree, but can make it unattractive.																
C. occidentalis	'Prairie Pride'	**Common Hackberry**		3	55	50	25	M							1,6	
Good tolerance to tough conditions. Affected by several pests that do not kill the tree, but can make it unattractive. Lighter fruit crop and does not develop witches broom.																

Scientific Name	Cultivar	Common Name [Flower Color]	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
C. occidentalis x C. laevigata	'Magnifica'	**Magnifica Sugar Hackberry**		5	50	40	25	M							1,6	
Cross between Sugar and Common Hackberry. Less hardy, but withstands drought, salt and compacted soil better.																
Cercidphyllum japonicum	—	**Katsuratree**		4b	60	35	18	M							1,6	
Difficult to transplant, water is needed during establishment.																
C. japonicum	'Rotfuchs' 'Red Fox'	**Katsuratree**		4b	60	35	18	M							1,6	
Difficult to transplant, water is needed during establishment. Red foliage and slower grower than species.																
Cercis canadensis	—	**Eastern Redbud** (PINK)		4	25	25	13	S							1	
Avoid wet soils. Suffers when stressed.																
C. canadensis	'Alba'	**Eastern Redbud** (WHITE)		4b	25	25	13	S							1	
Avoid wet soils. Suffers when stressed.																
C. canadensis	'Forest Pansy'	**Eastern Redbud** (ROSE-PURPLE)		5b	25	25	13	S							1	
Avoid wet soils. Suffers when stressed. Purple foliage.																
C. canadensis	'Royal White'	**Eastern Redbud** (WHITE)		4	25	25	13	S							1	
Avoid wet soils. Suffers when stressed. May be more cold hardy than 'Alba' the other white flowered form.																
C. canadensis	'Northern Strain'	**Eastern Redbud** (ROSE)		4	25	25	13	S							1	
Avoid wet soils. Suffers when stressed. More cold hardy species.																
Chionanthus virginicus	—	**White Fringtree**		4	25	25	13	S								
Specimen small tree. Very adaptable.																
Cladrastis kentukea (lutea)	—	**Yellowwood** (WHITE)		4a	50	55	25	L							1,6	
Structural pruning is necessary for poor branch attachment. Prune in summer to avoid bleeding.																
Cornus mas	'Golden Glory'	**Corneliancherry Dogwood** (YELLOW)		4b	20	20	10	S							2,5	
Can be pruned to raise crown for more tree like form and expose exfoliating bark. Relatively adaptable, but may slow to reestablish. Heavy bloomer, but may be less cold hardy.																
C. mas	'Redstone'	**Corneliancherry Dogwood** (YELLOW)		4b	25	20	10	S							2,5	
Can pruned to raise crown for more tree like form and expose exfoliating bark. Relatively adaptable, but may slow to reestablish. Heavy fruit set.																
Corylus colurna	—	**Turkish Filbert**		4	50	30	15	S							2	
Tolerant of tough conditions, but will require watering for establishment.																

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Crataegus crus-galli var. inermis	'Cruzam' Crusader™	**Thornless Cockspur Hawthorn**		4a	25	25	13	S							3,6	
Thornless cultivar.																
Crataegus laevigata	'Crimson Cloud'	**English Hawthorn** (RED)		4	25	20	10	S							3,6	
Adaptable and tolerant of many conditions. Pruning lower limbs may be necessary if planted as street tree. Thorns.																
C. laevigata	'Paulii'	**English Hawthorn** (RED)		4	25	20	10	S							3,6	
Adaptable and tolerant of many conditions. Pruning lower limbs may be necessary if planted as street tree. Thorns. Double flowers.																
Crateagus phaenopyrum	'Fastigiata'	**Washington Hawthorn** (WHITE)		4a	30	25	13	S							3,6	
Adaptable and tolerant of many conditions. Pruning lower limbs may be necessary if planted as street tree. Thorns. Columnar with flowers and fruit smaller than species.																
C. phaenopyrum	'Princeton Sentry'	**Washington Hawthorn** (WHITE)		4a	30	20	10	S							3,6	
Adaptable and tolerant of many conditions. Pruning lower limbs may be necessary if planted as street tree. Almost thornless, can be grown to single trunk for street tree.																
C. phaenopyrum	Presidential™	**Washington Hawthorn** (WHITE)		4a	15	15	10	S							3,6	
Adaptable and tolerant of many conditions. Pruning lower limbs may be necessary if planted as street tree. Thorns. Tree form.																
C. phaenopyrum	Washington Lustre®	**Washington Hawthorn** (WHITE)		4a	25	25	13	S							3,6	
Adaptable and tolerant of many conditions. Pruning lower limbs may be necessary if planted as street tree. Good vigor and fewer thorns.																
Crataegus viridis	'Winter King'	**Winter King Hawthorn** (WHITE)		4a	25	25	13	S							3,6	
Adaptable and tolerant of many conditions. Pruning lower limbs may be necessary if planted as street tree. Thorns. Good fall color and showy winter/fall fruit.																
Fagus sylvatica	'Riversii'	**European Beech**		4a	50	40	20	L							6	
More tolerant of urban soil conditions than American Beech - avoid wet soils. Many cultivars exist, this one has deep purple leaves.																
Fraxinus americana	—	**White Ash**		3	70	60	30	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Purple fall color.																Not permitted to plant due to presence of Emerald Ash Borer
F. americana	'Autumn Purple®'	**White Ash**		4	45	60	30	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Reddish to purple fall color. Seedless																Not permitted to plant due to presence of Emerald Ash Borer
F. americana	'Empire'	**White Ash**		3	50	25	13	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Strong central leader. Red to purple fall color.																Not permitted to plant due to presence of Emerald Ash Borer
F. americana	'Greenspire'	**White Ash**		3	40	30	15	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Upright form. Orange fall color.																Not permitted to plant due to presence of Emerald Ash Borer

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F. americana	Northern Blaze® (Jefnor)	**White Ash**		3	60	30	15	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Seedless. Purple fall color.				Not permitted to plant due to presence of Emerald Ash Borer												
Fraxinus pennsylvanica	—	**Green Ash**		2	60	30	15	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure.				Not permitted to plant due to presence of Emerald Ash Borer												
F. pennsylvanica	'Bergeson'	**Green Ash**		3	50	35	18	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Seedless. Yellow in fall. One of the most cold hardy.				Not permitted to plant due to presence of Emerald Ash Borer												
F. pennsylvanica	'Cimmzam' Cimmaron®	**Green Ash**		4	60	30	15	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure, but noted for a central leader and good branching. Red to yellow fall color.				Not permitted to plant due to presence of Emerald Ash Borer												
F. pennsylvanica	'Marshall's Seedless'	**Green Ash**		3a	50	40	20	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Seedless. Yellow fall color.				Not permitted to plant due to presence of Emerald Ash Borer												
F. pennsylvanica	'Patmore'	**Green Ash**		3a	60	35	18	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. Seedless.				Not permitted to plant due to presence of Emerald Ash Borer												
F. pennsylvanica	'Summit'	**Green Ash**		3b	45	25	13	M							1,3	
Host of Emerald Ash Borer, plant with caution. Adaptable and tolerant. Prune for structure. One of the most cold hardy. Uniform crown.				Not permitted to plant due to presence of Emerald Ash Borer												
Ginkgo biloba	'Autumn Gold'	**Ginkgo**		4	50	30	15	S							6	
Adaptable and tolerant. Golden yellow fall color. Fruitless. Prune in spring. Symmetrical, broad and rounded crown.																
G. biloba	'Magyar'	**Ginkgo**		4	50	25	13	S							6	
Adaptable and tolerant. Yellow fall color. Fruitless. Prune in spring. Upright, ascending branching.																
G. biloba	'Princeton Sentry'	**Ginkgo**		4	60	25	13	S							6	
Adaptable and tolerant. Yellow fall color. Fruitless. Prune in spring. Upright habit that tapers to a point.																
Gleditsia triacanthos var. inermis	'Halka'	**Honey Locust**		4a	40	40	20	M							3,6	
Adaptable and tolerant. Prune in fall. Fruitless. Round head with less dropping branches.																
G. triacanthos var. inermis	'Imperial'	**Honey Locust**		4a	30	35	18	M							3,6	
Adaptable and tolerant. Prune in fall. Seedless. Essentially fruitless. Most compact and formal form.																
G. triacanthos var. inermis	'Moraine'	**Honey Locust**		4a	40	50	25	M							3,6	
Adaptable and tolerant. Prune in the fall. Fruitless. Golden yellow fall color. Wide spreading crown.																

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G. triacanthos var. inermis	'Shademaster'	**Honey Locust**		4a	45	35	18	M							3,6	
Adaptable and tolerant. Prune in the fall. Essentially fruitless. Upright, symmetrical habit.																
G. triacanthos var. inermis	'Skyline'	**Honey Locust**		4a	45	35	18	M							3,6	
Adaptable and tolerant. Prune in the fall. Essentially fruitless. Ascending branches. Bright golden yellow fall color. One of the most cold hardy.																
G. triacanthos var. inermis	'Sunburst'	**Honey Locust**		5	35	30	15	M							3,6	
Adaptable and tolerant. Prune in the fall. Fruitless. Golden leaves on new growth changing to bright green. More susceptible to canker disease.																
Gymnocladus dioicus	—	**Kentucky Coffeetree**		3b	70	50	25	L							2	
Adaptable and tolerant to urban conditions. Good for large areas.																
Halesia carolina	—	**Carolina Silverbell** (WHITE)		4	35	25	13	S							6	
Difficult to transplant. Chloratic in high pH soils.																
Hamamelis virginana	—	**Whitchhazel** (YELLOW)		3	25	20	10	S								
Prefers a moist soil. Moderate tolerance. Attractive yellow fall color. Flowers in the fall.																
Hydrangea paniculata	—	**Panicle Hydrangea**		3	20	20	10	S								
Very adaptable, hardy, urban tolerant plant. Over 70 cultivars.																
Juglans nigra	—	**Black Walnut**		4	75	60	30	L							2,6	
Tolerates drier soils, but prefers moist soils. Open crown. Difficult to transplant.																
Juniperus virginiana	—	**Eastern Red Cedar**		4	50	20	10	S							6	
Tolerant of tough conditions. Good as specimen, in groupings, hedges or screens.																
Koelreuteria paniculata	—	**Panicled Golden-raintree** (YELLOW)		5	40	40	20	S							6	
Tolerant and adaptable. Prune in the winter. Somewhat weak wooded. Yellow flowers in summer.																
Larix decidua	—	**European/ Common Larch**		2	75	30	15	L							6	
Needs moisture, well-drained and sunny conditions. Deciduous conifer with yellow fall color. More tolerant of cultivation than native Eastern Larch.																
Liquidambar styraciflua	'Moraine'	**American Sweetgum**		5	60	35	18	M							2,6	
Slow to reestablish. Not tolerant of urban conditions. Prune during winter. Most vigorous on wet site. Red fall color.																

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Liriodendron tulipfera	—	**Tuliptree** (GREEN-YELLOW)		5	90	50	25	L							6	
Reserve for large areas. Prune in winter. Develops scorch in poor, tight growing conditions. Yellow fall color.																
Maackia amurensis	—	**Amur Maackia** (WHITE)		4a	25	25	13	S								
Adaptable. Summer white flowers. Attractive bronze colored bark.																
Magnolia acuminata	—	**Cucumbertree Magnolia** (GREEN-		4a	80	60	30	L							6	
Slow to reestablish and not tolerant of tough conditions. Reserve for large areas. Prune after flowering. Thin barked, easily damaged.																
Magnolia stellata	—	**Star Magnolia** (WHITE)		4a	25	15	8	S							1,6	
Avoid extreme sites and areas that heat up early in the spring to protect flower buds.																
M. stellata	'Centennial'	**Star Magnolia** (WHITE)		4a	25	15	8	S							1,6	
Avoid extreme sites and areas that heat up early in the spring to protect flower buds. Slight pink on the flower, good upright form.																
M. stellata	'Royal Star'	**Star Magnolia** (WHITE)		4a	10	15	8	S							1,6	
Avoid extreme sites and areas that heat up early in the spring to protect flower buds. Pink buds, white flowers. Densely branched.																
Malus baccata	'Jackii'	**Siberian Crabapple** (WHITE)		3	30	15	8	S							2	
Deep green foliage. Highly resistant to scale and Japanese beetle. Low branching prune for clearance.																
Malus sargentii	—	**Sargent Crabapple** (WHITE)		4	15	12	6	S							2,3	
Tolerant, small, dense tree. Relatively resistant to most crabapple diseases and insect problems.																
Malus spp.	'Adams'	**Crabapple** (PINK)		4	25	25	13	S							2	
Rounded, dense crown. Reddish foliage in youth turning purple with age.																
M. spp.	Brandywine® 'Branzam'	**Crabapple** (ROSE-PINK)		3	20	20	10	S							2	
Double flowers. Reddish to purple fall color.																
M. spp.	'Cardinal'	**Crabapple** (SCARLET)		4	20	20	10	S							2	
Few fruits. Spreading, flat-topped. Purple-red foliage.																
M. spp.	'Centzam' Centurion®	**Crabapple** (ROSE-RED)		4	25	20	10	S							2	
Upright branching. Dark reddish green leaves.																
M. spp.	'Dolgo'	**Crabapple** (WHITE)		3	40	25	13	S							2	
Flowers well in alternate years. Open habit.																
M. spp.	'Donald Wyman'	**Crabapple** (RED-PINK)		4	20	25	13	S							2	
Spreading form, dark green foliage. Fruit persistent in winter.																
M. spp.	Golden Raindrops™	**Crabapple** (WHITE)		4	15	20	10	S							2	

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		Golden yellow fruit. Small, slender, horizontal spreading.														
M. spp.	'Hargozam' Harvest Gold ®	**Crabapple** (WHITE)		4	30	20	10	S							2	
		Flowers one week later than most crabs. Gold fruit that persist through winter. Moderately columnar to vase-shaped.														
M. spp.	'Indian Magic'	**Crabapple** (DEEP PINK)		4	20	20	10	S							2	
		Small, red, persisting fruit. Rounded habit. Orange to red fall color.														
M. spp.	'Indian Summer'	**Crabapple** (ROSE-RED)		4	18	25	13	S							2	
		Purple green foliage. Broad globe-shaped.														
M. spp.	'Prairifire'	**Crabapple** (RED)		4	20	20	10	S							2	
		Red-purple, persistent fruit. Upright when young turning round. New leaf growth maroon turning green.														
M. spp.	'Red Jewel'	**Crabapple** (WHITE)		4	15	12	10	S							2	
		Rounded habit with horizontal branches. Dark green foliage.														
M. spp.	'x robusta'	**Crabapple** (WHITE)		4	40	25	13	S							2	
		Oval, dense branching.														
M. spp.	'Selkirk'	**Crabapple** (ROSE-RED)		4	25	25	13	S							2	
		Glossy fruits. Open, upright. Foliage opens reddish green turning to dark green.														
M. spp.	Sugar Tyme™	**Crabapple** (WHITE)		4	18	15	7.5	S							2	
		Persistent red fruit. Upright oval. Dark green foliage.														
M. spp.	'Thunderchild'	**Crabapple** (PINK)		3	20	20	10	S							2	
		Compact, upright-spreading. Deep purple leaves.														
M. spp.	'x zumi'	**Crabapple** (WHITE)		4	20	20	10	S							2	
		Pyramidal habit, may become rounded.														
Metasequoia glyptostroboides	—	**Dawn Redwood**		5	100	50	25	L							4	
		Performs best in moist, deep, well-drained, slightly acidic soils. Avoid frost pockets which may affect fall foliage.														
M. glyptostroboides	'Sheridan Spire'	**Dawn Redwood**		5	60	30	15	L							4	
		Performs best in moist, deep, well-drained, slightly acidic soils. Avoid frost pockets which may affect fall foliage. More upright.														
Nyssa sylvatica	—	**Black Tupelo**		4b	50	35	18	M							4,6	
		Difficult to transplant. Fall pruning. Great summer foliage and brilliant red fall color. Not for the most tough urban sites, but could make a nice street tree.														
Ostrya virginiana	—	**Hophornbeam**		3b	45	30	15	S							4,6	
		Slow to reestablish. Performs best in cool, moist, well-drained slightly acidic soils.														

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Phellodendron amurense	His Majesty™	**Amur Corktree**		3b	45	30	15	L							6	
Tolerant and adaptable. Prune in winter. Reserve for large areas. Interesting bark. Yellow fall color. Male, so will not produce fruit, but can pollinate.																
P. amurense	'Macho'	**Amur Corktree**		4	45	45	23	L							6	
Tolerant and adaptable. Prune in winter. Reserve for large areas. Interesting bark. Yellow fall color. Male, so will not produce fruit, but can pollinate.																
Picea abies	—	**Norway Spruce**		2	60	30	15	L							2,3	
Reserve for large areas. Performs best in well-drained, sandy soils. Prune in spring. Consider P. orientalis and P. omorika.																
Picea glauca	—	**White Spruce**		2	60	20	10	L							3	
Adaptable and tolerant. Reserve for large areas. Prune in spring. Consider P. orientalis and P. omorika.																
Picea omorika	—	**Serbian Spruce**		4	60	25	30	M								
Noted for excellent foliage. One of the most adaptable spruces.																
Picea orientalis	—	**Oriental Spruce**		5a	60	25	30	L							4	
Noted for excellent foliage.																
Pinus cembra	—	**Swiss Stone Pine**		3	40	20	10	M							4	
Small, dense pine. Requires well-drained, loamy soils in full sun. Slow grower.																
Pinus nigra	—	**Austrian Pine**		4	60	30	15	M							3	
Adaptable and tolerant. Stiff, dark green needles. With age, becomes flat topped and umbrella like.																
Pinus strobus	—	**Eastern White Pine**		3	80	40	20	L							1,3	
Easily transplanted and grown. Prefers moist, well-drained, acidic soils. Susceptible to white pine blister rust. Choose certified rust resistant plants. Also susceptible to white pine weevil. Prone to breakage from strong winds, ice and heavy snow.																
Platanus x acerifolia	'Bloodgood'	**London Planetree**		5	85	70	35	L							2,3	
Adaptable and tolerant. Attractive bark. Cold injury in harsh winters. Tolerates severe pruning. Drops twigs and leaves.																
P. acerifolia	'Morton Thornhill' Exclamation™	**London Planetree**		5	60	45	23	L							2,3	
Adaptable and tolerant. Attractive bark. Cold injury in harsh winters. Tolerates severe pruning. Drops twigs and leaves.																
P. acerifolia	Ovation™	**London Planetree**		5	50	60	30	L							2,3	
Adaptable and tolerant. Attractive bark. Cold injury in harsh winters. Tolerates severe pruning. Drops twigs and leaves.																

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Platanus occidentalis	—	**Sycamore**		4b	100	80	40	L							2,3	
Prefers deep, rich, moist soils. Cold injury in harsh winters. Attractive bark. Drops twigs and leaves.																
Prunus maackii	—	**Amur Chokecherry** (WHITE)		2b	35	35	28	S							3,6	
Attractive bark. Dense round canopy. Prune to maintain tree shape.																
Prunus sargentii	'Columnaris'	**Sargent Cherry** (PINK)		5a	35	15	8	S							6	
Good yellow, orange to red fall color - develops early. Attractive bark. With age, becomes vase shaped. Short-lived.																
Prunus sargentii x P. subhirtella	'Accolade'	**Accolade Flowering Cherry** (PINK)		5a	35	20	10	S							6	
Good yellow, orange to red fall color - develops early. Attractive bark. Short-lived. Open habit.																
Pyrus calleryana	'Aristocrat'	**Callery Pear** (WHITE)		4	45	20	10	S							1,6	
Adaptable and tolerant. Prune for structure to avoid branch splitting, but much better than 'Bradford'. Blooms later.																
P. calleryana	'Chanticleer'	**Callery Pear** (WHITE)		4	30	15	10	S							1,6	
Adaptable and tolerant. Prune for structure to avoid branch splitting, but much better than 'Bradford', also narrow, longer-lived and hardier.																
P. calleryana	'Jaczam' Jack™	**Callery Pear** (WHITE)		4	15	10	10	S							1,6	
Adaptable and tolerant. Prune for structure. Yellow fall color. Good where space is limited.																
P. calleryana	'Jilzam' Jill™	**Callery Pear** (WHITE)		4	15	15	10	S							1,6	
Adaptable and tolerant. Prune for structure. Yellow fall color. Good where space is limited.																
Pyrus ussuriensis	—	**Ussurian Pear** (WHITE)		3	35	50	25	S							4	
Hardy pear with dense, rounded habit. Dark green, glossy leaves turn red to purplish in fall.																
Quercus alba	—	**White Oak**		3b	60	60	30	L							2,6	
Attractive bark. Growth is slow, transplant at a small size. Reserve for large areas.																
Quercus bicolor	—	**Swamp White Oak**		4a	60	60	30	M							2,6	
Attractive bark. Easier to transplant than Q. alba. Likes acid soils. Yellow to red fall color.																
Quercus imbricaria	—	**Shingle Oak**		4	60	60	30	M							2,6	

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Adaptable. Reserve for large areas. Transplants easier than most oaks.																
Quercus macrocarpa	—	**Bur Oak**		3a	80	90	45	L							2,6	
Adaptable. Reserve for large areas. Difficult to transplant. More tolerant of urban conditions than most oaks.																
Quercus muehlenbergii	—	**Chinkapin Oak**		4	50	55	28	M							2,6	
Adaptable. Slow grower and difficult to transplant. Red, yellow to brown fall color.																
Quercus palustris	—	**Pin Oak**		4a	70	50	25	M							2,6	
Adaptable. Moderate tolerance, but very intolerant of high pH soils. Strongly pyramidal habit.																
Quercus robur	'Fastigiata'	**English Oak**		5a	50	15	25	M							2,6	
Adaptable and tolerant. Twig dieback in harsh winters.																
Q. robur	'Pyramich' Skymaster®	**English Oak**		5a	50	25	13	M							2,6	
Adaptable and tolerant. Twig dieback in harsh winters. Mildew resistant. Tighter than 'Fasitgiata'.																
Quercus rubra	—	**Northern Red Oak**		3b	75	60	30	L							2	
Adaptable and tolerant expect for high pH. Transplants easily and grows fast for an oak.																
Sassafras albidum	—	**Common Sassafras** (YELLOW)		5a	60	40	20	M							4,5,6	
Difficult to transplant. Prefers a moist, acid, well-drained soil.																
Styphnolobium japonicum	'Princeton Upright'	**Scholar-tree** (WHITE)		5a	40	50	25	M							1,2	
Also known as Sophora japonica. Adaptable and tolerant once established after transplanting. Twig dieback in harsh winters. Summer flowers. More upright.																
S. japonicum	'Regent'	**Scholar-tree** (WHITE)		5a	50	45	23	M							1,2	
Also known as Sophora japonica. Adaptable and tolerant once established after transplanting. Twig dieback in harsh winters. Summer flowers, blooms earlier.																
Syringa reticulata	—	**Japanese Tree Lilac** (WHITE)		3	30	25	13	S								
Adaptable and tolerant. Blooms in summer. Prune after flowering. Attractive bark. A couple of reported sites where the tree has reseeded.																
S. reticulata	'Ivory Silk'	**Japanese Tree Lilac** (WHITE)		3a	25	15	13	S								
Adaptable and tolerant. Heavy blooms in summer. Prune after flowering. Attractive bark.																
S. reticulata	'Summer Snow'	**Japanese Tree Lilac** (WHITE)		3a	20	15	13	S								

Scientific Name	Cultivar	Common Name [Flower Color]	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
Adaptable and tolerant. Heavy blooms in summer. Prune after flowering. Attractive bark. Small tree with compact crown.																
Taxodium distichum	—	**Baldcypress**		5a	70	30	15	L							6	
Adaptable and tolerant expect for high pH. Can handle extensive flooding. A deciduous conifer.																
Thuja occidentalis	—	**White Cedar**		3	60	15	8	S							1	
Adaptable and tolerant, but prefers moist, rich soils. Tolerates pruning. Heavy snow can cause damage.																
T. occidentalis	'Nigra'	**White Cedar**		3	20	8	8	S							1	
Adaptable and tolerant, but prefers moist, rich soils. Tolerates pruning. Heavy snow can cause damage. Good dark green foliage.																
T. occidentalis	'Smaragd,' 'Emerald'	**White Cedar**		3	15	4	8	S							1	
Adaptable and tolerant, but prefers moist, rich soils. Tolerates pruning. Heavy snow can cause damage. Bright emerald green foliage.																
T. occidentalis	'Techny'	**White Cedar**		3	15	10	8	S							1	
Adaptable and tolerant, but prefers moist, rich soils. Tolerates pruning. Heavy snow can cause damage. Good dark green foliage. Slow grower.																
T. occidentalis	'Bailyard' Frontyard®	**White Cedar**		4	75	40	20	M							1,3,5	
Adaptable and tolerant. Prune for structure. Symmetrical, pyramidal habit with denser branching.																
T. occidentalis	'Continental Appeal'	**White Cedar**		4	60	40	20	M							1,3,5	
Adaptable and tolerant. Prune for structure. Wide, dense crown with narrow ascending branches.																
Tilia americana	Legend™	**American Linden , Basswood** (YELLOW)		4	55	35	28	M							1,3,5	
Adaptable and tolerant. Prune for structure. Distinctly pyramidal with a central leader and better branching than species.																
T. americana	'Redmond'	**American Linden , Basswood** (YELLOW)		4	60	30	15	M							1,3,5	
Adaptable and tolerant. Prune for structure. Uniform, pyramidal habit.																
Tilia cordata	'Baileyi' Shamrock®	**Littleleaf Linden** (YELLOW)		3	45	30	15	M							1,3,5	
Adaptable and tolerant. Prune for structure. More open crown. Quick grower.																
T. cordata	'Chancole' Chancellor®	**Littleleaf Linden** (YELLOW)		3	35	20	10	M							1,3,5	
Adaptable and tolerant. Prune for structure. Narrow upright habit. Better branch angles.																
T. cordata	'Glenleven'	**Littleleaf Linden** (YELLOW)		3	50	35	28	M							1,3,5	
Adaptable and tolerant. Prune for structure. Open habit. Quick grower.																
T. cordata	'Greenspire'	**Littleleaf Linden** (YELLOW)		3	45	30	15	M							3	
Adaptable and tolerant. Prune for structure. Uniform branching, straight trunk and dark green leaves.																

Scientific Name	Cultivar	Common Name (Flower Color)	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
Tilia x euchlora	—	**Crimean Linden** (YELLOW-WHITE)		3	60	30	15	M							5	
Adaptable and tolerant. Graceful habit with branches touching ground.																
Tilia tomentosa	—	**Sliver Linden** (YELLOW)		4b	70	55	28	M							5,6	
Adaptable and tolerant. Most drought tolerant of the lindens. Silver underside of leaves.																
T. tomentosa	'Green Mountain'	**Silver Linden** (YELLOW)		4b	60	40	20	M							5,6	
Adaptable and tolerant. Most drought tolerant of the lindens. Silver underside of leaves. Fast grower with dense crown.																
T. tomentosa	'Sashazam' Satin Shadow®	**Silver Linden** (YELLOW)		4b	50	40	20	M							5,6	
Adaptable and tolerant. Most drought tolerant of the lindens. Silver underside of leaves. Uniform, symmetrical growth. Dark green leaves with silver undersides.																
Tsuga canadensis	—	**Eastern Hemlock**		3	70	35	28	L							3,6	
Avoid hot, dry and windy locations. Tolerates shade and severe pruning. Host to invasive insect pest, hemlock wooly adelgid.																
Ulmus americana	'Jefferson'	**American Elm**		3b	50	50	25	S							3	
Adaptable and tolerant. Prune in the fall. Vase shape with arching limbs. Good DED resistance. Primary host of Asian Longhorned Beetle.																
U. americana	'Delaware #2'	**American Elm**		3b	70	80	40	S							3	
Adaptable and tolerant. Prune in the fall. Broad spreading crown. Good resistance to DED. Primary host of Asian Longhorned Beetle.																
U. americana	'New Harmony'	**American Elm**		4	50	50	25	S							3	
Adaptable and tolerant. Prune in the fall. Good form, DED tolerance is less than other cultivars. Primary host of Asian Longhorned Beetle.																
U. americana	'Princeton'	**American Elm**		3b	60	40	20	S							3	
Adaptable and tolerant. Prune in the fall. Good form and DED resistance. Long-history, developed before DED. Primary host of Asian Longhorned Beetle.																
U. americana	'Valley Forge'	**American Elm**		5	70	70	35	S							3	
Adaptable and tolerant. Prune in the fall. Classic elm form with excellent DED resistance. Not as cold hardy. Primary host of Asian Longhorned Beetle.																
Ulmus x spp.	'Morton' Accolade™	**Elm**		4	70	50	25	S								
Adaptable and tolerant. Prune in the fall. American elm-like habit. Glossy dark green foliage. Golden yellow fall color. Good DED resistance. Primary host of Asian Longhorned Beetle.																
U. x spp.	'Discovery'	**Elm**		3b	45	35	18	S								
Adaptable and tolerant. Prune in the fall. Upright, compact, oval to vase-like habit. Good DED resistance. Primary host of Asian Longhorned Beetle.																
U. x spp.	'Frontier'	**Elm**		5	35	25	13	S								
Adaptable and tolerant. Prune in the fall. Dark green foliage, red fall color. Case shaped habit. Primary host of Asian Longhorned Beetle.																
U. x spp.	'New Horizon'	**Elm**		3b	50	25	13	S								

Scientific Name	Cultivar	Common Name [Flower Color]	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Limitations	Features
Adaptable and tolerant. Prune in the fall. Upright and full crown. Good DED resistance. Primary host of Asian Longhorned Beetle.																
U. x spp.	'Patriot'	**Elm**		5	70	50	25	S								
Adaptable and tolerant. Prune in the fall. Upright, stiffly vase-shaped. Narrower than most elms. Good DED resistance. Primary host of Asian Longhorned Beetle.																
U. x spp.	'Prospector'	**Elm**		4	70	60	30	S								
Adaptable and tolerant. Prune in the fall. American elm-like habit. Great vigor. Primary host of Asian Longhorned Beetle.																
Viburnum prunifolium	—	**Blackhaw Viburnum** (WHITE)		3	30	15	8	S								
Adaptable. Transplants well. Small tree.																
Zelkova serrata	'Green Vase'	**Japanese Zelkova**		5a	70	50	25	S							1	
Adaptable. Attractive bark. Young trees susceptible to frost. Prune in the fall. Vase shape with upright branching. Bronze to red fall color.																
Z. serrata	'Green Veil'	**Japanese Zelkova**		5a	70	55	28	S							1	
Adaptable. Attractive bark. Young trees susceptible to frost. Prune in the fall. Upright narrow vase shaped.																
Z. serrata	'Halka'	**Japanese Zelkova**		5a	50	30	15	S							1	
Adaptable. Attractive bark. Young trees susceptible to frost. Prune in the fall. More open and less uniform crown. Yellow fall color.																
Z. serrata	'Musashino'	**Japanese Zelkova**		5a	45	15	8	S							1	
Adaptable. Attractive bark. Young trees susceptible to frost. Prune in the fall. Upright, tight, narrow crown. Yellow fall color.																
Z. serrata	Village Green™	**Japanese Zelkova**		5a	40	40	20	S							1	
Adaptable. Attractive bark. Young trees susceptible to frost. Prune in the fall. Straight trunk. Wide and dense canopy. Red fall color.																

Additional Recommended Trees for Northampton, MA

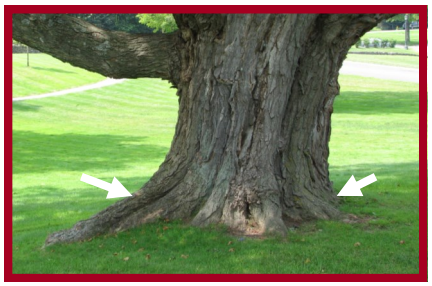
Scientific Name	Common Name	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Alkaline Soil	Salt	Air Pollution	Shade	Features
Acer buergerianum	Trident Maple		5	35	25	15	S	☺	☹	😐	😐	☺	☹	Fall Foliage
Limitations: Prone to excessive sucker growth from roots or lower stem and may require regular pruning, do not prune in spring.														
Cotinus obovatus	American Smoke Tree		4	30	20	15	S	☺	☹	😐			☺	Fall foliage
Cornus kousa	Korean Dogwood		4	30	30	15	M	☹	☹	😐	☹		☺	Edible fruit
Crateagus crusgalli var. inermis	Thornless Cockspur Hawthorn		3	30	35	17.5	M	☺	😐	☺	😐	☺	☹	Tolerates Juglandaceae toxicity
Limitations: Unpleasant flower odor														
Crateagus punctata	Ohio Pioneer Hawthorn		4	30	30	15	M	☺	😐	☺	😐	☺	😐	
Eucommia ulmoides	Hardy Rubber Tree		5	60	50	25	M	☺	☺	☺	😐		☺	Low maintenence, heat tolerant
Sorbus alnifolia	Korean Mountain-ash		4	50	30	15	M	😐	😐	☺	😐	😐	☹	Showy white flowers, red fruit, fast growing, winter interest
Limitations: Short-lived tree, not heat tolerant														
Quercus acutissima	Sawtooth oak		6	60	60	30	L	☺	😐	😐			☹	Heat tolerant, winter interest, acorns
Quercus coccinea	Scarlet Oak		4	80	50	25	L	☺	😐	☹			☹	Acorns are an important food source for many animals
Quercus phellos	Willow oak		5	75	50	25	L	☺	☺	☹	☺	☺	☹	Winter interest, acorns
Tsuga chinensis	Chinese hemlock		6	70	30	28	L			😐			😐	Resistant to hemlock woolly adelgid

Scientific Name	Common Name	Form	Hardiness Zone	Mature Height	Crown Spread	Soil Volume	Planting Area	Tolerances: Drought	Poor Drainage	Allkaline Soil	Salt	Air Pollution	Shade	Features
Ulmus americana 'Colonial Spirit'	**American Elm**		4	65	50	25	L			☺		☺	☹	Excellent resistance to Dutch Elm Disease
Limitations: Requires hot summers														
Ulmus americana 'Creole Queen'	**American Elm**		7	50	15	15	L					😐	☹	Heat tolerant
Ulmus americana 'Prairie Expedition'	**American Elm**		3	60	40	20	L					😐	☹	Excellent resistance to Dutch Elm Disease
Ulmus americana 'St Croix'	**American Elm**		3	75	90	45	L					😐		Excellent resistance to Dutch Elm Disease
Ulmus parvifolia	**Lacebark Elm**		5	50	50	25	L	☺	☺	☺	☺	😐	☺	Good resistance to Dutch Elm Disease, winter interest, migrant birds
Limitations: Do not prune between mid-April and mid-Oct.														

PROPER PLANTING GUIDELINES

TREE PLANTING 101

The saying goes, “The best time to plant a tree was 20 years ago, but the next best time is now.” Planting your tree properly is one of the best things you can do to ensure the successful establishment of your tree in the landscape. Prior to planting, treat your tree gently and protect it during transport. Keep it in a cool, shaded place and keep the root ball moist. Plant the tree as soon as possible. Follow these steps for a successful planting. And remember, call Dig Safe® at 811before you dig.



Trunk flare on mature tree

1. **Take Stock!** Examine your tree and remove packaging around trunk and branches.
2. **Find your Flare!** Locate the trunk flare (also called root flare or the root collar). The ANSI A300 defines this as “the area of transition between the root system and the trunk,” and it should be at or just above the finished grade. It is where the trunk will typically start to curve and where structural roots become distinct from the trunk. This is often highly visible on trees in the woods, and can be less conspicuous on young, nursery-grown trees. There may be excess soil on top of the trunk flare, so you may have to remove soil from the top of the root ball to identify the flare. You can gently probe the root ball with a chaining pin, skewer, screwdriver, or wire in order to locate structural roots.

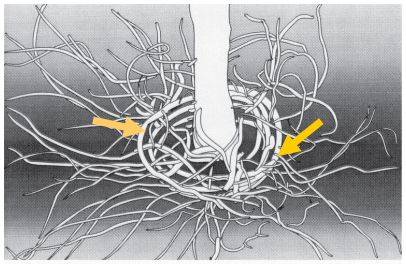
Removing excess soil from the top of the root ball using a hand cultivator

3. **Determine the size of the planting hole.** Measure the width and depth of the root ball and use this to determine how wide and deep to dig, keeping in mind that the flare should be at or just above grade. The hole should be 2 to 3 times as wide as the root ball. In hard, compacted soil, the hole should be closer to 3 times as wide.
4. **Get digging!** Dig a wide hole with sloped sides. If the sides appear smooth or “glazed,” use a shovel to rough up the sides. Dig only as deep as the root flare. Periodically check your depth and width by comparing with the root ball.
5. **Remove packaging from the root ball.** For container trees, this means removing the tree from the container. For balled and burlapped trees (B&B), this means removing the burlap and wire basket. For in-ground fabric, this means removing all of the bag. If it seems like the root ball of a B&B tree will fall apart, you may want to place the tree in the hole and then remove packaging. For all trees, remove trunk wrap and check the canopy for flagging tape, rope, or other items, and remove.

B&B trees with trunk wrap

TREE PLANTING 101

6. **Examine the roots!** For all trees, cut circling roots. For container trees, remove roots growing against the container and remove a thin layer of roots from the side and bottom. For B&B trees, straighten, cut, or remove circling roots. If you plant trees a lot, you may want to dedicate a pair of cheap hand pruners for this purpose.



Circling roots

7. **Place the tree in the hole.** Roll or place the tree in the center of the hole. Check the depth of the root flare and adjust hole depth, if necessary.
8. **Check the placement of the tree.** Examine the tree from two sides, 90° apart. Is the trunk straight? Are branches facing the way you want? You can backfill with a little soil to help stabilize the tree as you check the placement.
9. **Backfill and water**. Once the tree is stabilized, continue to backfill with the soil that you dug out. Halfway through the backfilling process, water the tree to help remove air pockets and reduce future settling. Continue to backfill. To aid in watering, you can build a low dirt berm around the edge to help guide water to the root ball. Water thoroughly after planting.
10. **Mulch.** Use an organic mulch in a ring around the tree. Mulch should be 2 to 4 inches high. Once mulch has settled, the depth should not be greater than 2 inches. Keep mulch 3 inches away from the trunk. Do not apply mulch against the trunk of the tree so that it appears like a volcano; this is incorrect and detrimental to the tree, though is often observed in the landscape.


Correct mulch technique. Wide ring, away from trunk.


Improper mulch technique

Caring for your New Tree

The next two years are critical for the successful establishment of your tree. Make sure you water your tree, but be careful not to overwater. During hot, summer months, your tree may need 10 gallons per caliper inch per week. When it is cooler, that amount may be 5 gallons per caliper inch per week. You can check the soil moisture of the root ball by probing the soil with a chaining pin or stiff wire. If the rod goes in easily, there is likely adequate moisture, but if it is difficult, that may indicate the soil is dry. As you remove the rod or chaining pin, if you notice suction has developed, that may indicate the soil is too wet; likewise, if the leaves are wilting, but you are watering regularly, you may be watering too much. Newly-planted trees typically do not need to be fertilized or pruned.

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CARING FOR NEW TREES

Congratulations! If you are reading this, it means you are caring for a newly-planted tree. Your actions over the next two to three years will help your tree become established in the landscape and survive for years to come. What should you be doing?

WATERING

New trees need water, especially during hot summer weather! Watering with a garden hose at low volume or utilizing a soaker hose is ideal since it allows water to slowly infiltrate the soil while minimizing the potential for root ball erosion. Less frequent, but thorough, watering is more beneficial to root development than more frequent, but shallow, watering. Remember that tree roots need oxygen and over-watering is just as problematic as under-watering.

It is hard to say exactly how much to water your tree. Natural rainfall and specific soil conditions can vary, but newly-planted trees need approximately 1.5 inches of rain per week. This translates to about 10 gallons per caliper inch, per week, from spring through autumn.

Watering technique using one-gallon jugs

Watering bag

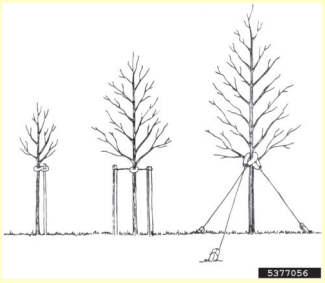
An Easy Watering Technique

Using 10 one-gallon plastic jugs, carefully perforate the bottom of the jugs and place them around the base of the tree tied together and then fill them with water. This will allow the water to slowly seep out and water the tree.

You can also purchase watering bags that you fill, using a hose to allow for a slow soaking.

TREE STABILIZATION

Tree stabilization may be necessary in areas with high winds, where mower or string trimmer damage is likely, for high-traffic areas, or for trees that do not have an adequate root system. Tree stabilization may consist of stakes, guys, and other materials. Here we describe a method using stakes, but there are a variety of systems out there, with varying costs and amounts of labor required. If you are using stakes, use 2 to 3 stakes, placed just inside the edge of the mulch ring and wide nylon or canvas straps, tied loosely around the trunk. For an unstable root ball, use 1-3 stakes attached low on the trunk. Remove after 1 year.



Staking techniques, ISA, bugwood.org

TRUNK GUARDS

If winter damage to the trunk by rodents is a concern, install a trunk guard made of plastic tubing, hardware cloth, or wire fencing. Allow 1-4 inches of space around the trunk and ensure it is tall enough to protect in snow. Remove in the spring.

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CARING FOR NEW TREES

MULCHING

Mulch is any woody or herbaceous material applied over the root zone that improves tree health by replicating the forest floor. Mulch can be aged wood chips, shredded bark, pine needles, composted leaves, composted grass clippings, and other organic material.

Why mulch? Mulching your new tree is important and serves more than just an aesthetic function. Mulch reduces the shortcomings of urban sites by replicating natural processes occurring in the forest. Mulch increases available nutrients and water retention, buffers soil temperatures, and provides root protection. Mulch also reduces root-zone erosion potential, soil compaction, and weed growth, and prevents lawnmower and other machinery damage.

|———*Root Zone*———|

Correct mulch technique

How to use mulch. Place mulch in a ring at least 3 inches away from the tree trunk, at a depth of 2-4 inches, and ideally out to the tree crown. Raking away old mulch before applying new mulch helps maintain correct mulch depth. Occasionally, you may need to pull mulch away from the trunk of the tree as the mulch settles around.

Improper mulch technique—piled on trunk and does not cover whole root zone

FERTILIZING

Fertilizer should only be used if a soil test indicates a deficiency. New trees typically do not require fertilization. For information on testing your soil, contact the UMass Soil and Plant Nutrient Testing Lab, https://soiltest.umass.edu/ or 413-545-2311. Improper use of fertilizer can damage your tree.

PRUNING AND PERIODIC INSPECTION

Prune dead and broken branches at planting. After 2 years, you may begin structural pruning. Your tree will likely require pruning every 1-2 years to establish and maintain proper structure. If your tree is within 10 feet of utility lines, or you need to use a ladder or chainsaw, contact an arborist. For guidance on tools, techniques, and safety, see *The Tree Owner's Manual*, pages 18-23. Periodically, inspect the tree for insect and disease problems. Protect the tree from human activities such as construction, soil compaction, and road salt.

REFERENCES: *Tree Owner's Manual*, www.treeownersmanual.info ♦ *Tree Planting Best Management Practices*. 2014. 2nd ed. Champaign, IL: International Society of Arboriculture ♦ *New Tree Planting*. 2011. International Society of Arboriculture, www.treesaregood.com/treecare/resources/new_treeplanting.pdf

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PROTECTING OUR COMMUNITY TREES

In Massachusetts, we are lucky to have state laws that govern and protect our public roadside trees. The best way to learn about these laws is to read them in full. You can do this by visiting your local library or the Massachusetts State website at www.malegislature.gov/Laws/GeneralLaws/. This Fact Sheet attempts to summarize these laws.

Which Laws Govern Public Trees in Massachusetts?

- Massachusetts General Law, Chapter 87 is the most important law governing public shade trees. It outlines the powers of the Tree Warden, procedures for removing shade trees, procedures for planting public trees, and penalties for violating provisions of the law.
- Massachusetts General Law, Chapter 40, Section 15C augments Chapter 87 with additional requirements concerning the removal of trees on Scenic Roads.
- Some communities also have additional local ordinances governing the protection of both public and private community trees. For example, Wellesley recently passed an ordinance that provides protection to trees during construction, and Springfield has a law that provides protection for all trees over 36 inches in diameter.

What are the Key Elements of Chapter 87?

- All trees within the public way are defined as public shade trees.
- The Tree Warden is responsible for the care, control, protection, and maintenance of all public shade trees, except those within a state highway, and shall enforce all the provisions of law for the preservation of such trees.
- No other person may plant, trim, cut, or remove a public shade tree without permission of the Tree Warden.
- No person, including the Tree Warden, may cut, trim, or remove any tree, greater than one and one-half inches in diameter, without a public hearing.
- Public notice of such a hearing must be posted, at least seven days prior to the hearing, on the trees in question, in two or more public places in town, and in a newspaper of general circulation for the town in each of two successive weeks.
- The Tree Warden shall not cut or remove a public shade tree if, at or before the public hearing, objection is made in writing by one or more persons, unless such cutting or removal is approved by the selectmen or by the mayor.
- Any person injured in his property by the trimming, cutting, removal, or retention of any such tree may recover the damages, if any, from the town under Chapter 79.
- Utilities may, or at the request of the Tree Warden must, file an annual vegetation management plan and or hazard tree removal plan with communities.
- **Finally,** nothing contained in chapter 87 shall prevent the trimming, cutting, or removal of any tree which endangers persons traveling on a highway, or the removal of any tree, if so ordered by the proper officers, for the purpose of widening the highway.

PROTECTING OUR COMMUNITY TREES

What if a Tree is Located on a Designated Scenic Road?

- No public shade tree may be cut, trimmed, or removed from along a designated scenic road, for the purposes of road repair, maintenance, reconstruction or paving work, without the prior written consent of the Planning Board after a public hearing.
- The public hearing regarding the cutting or removal of trees along scenic roads shall be consolidated into a single public hearing before the Tree Warden and the Planning Board, and notice of such consolidated public hearing shall be given by the Tree Warden as provided for in Chapter 87.

What if a Tree is Located on a Numbered State Highway?

- The Massachusetts Department of Transportation shall have the care and control of all trees within state highways, and may trim, cut, or remove such trees.
- No public hearing is required.

What Should a Citizen do if He or She Feels These Laws are not being Enforced?

- First contact your Tree Warden to discuss the issue with him or her and make sure that he or she is aware of the issues involved and these regulations.
- You may also want to share this Fact Sheet with the Tree Warden, Select Board, Planning Board, and other town officials.
- Please also contact us if we can be of assistance in any way regarding community trees or forests.
- Finally, consider advocating for the creation of a Tree Board or Committee in your community. Many communities have found that such committees can work effectively with their Tree Wardens to improve the management, maintenance, and public support for community trees and forests.

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Massachusetts Department of Conservation and Recreation
251 Causeway Street, Suite 600, Boston, MA 02114
www.mass.gov/dcr/urban-and-community-forestry

In Partnership with:
USDA Forest Service and
the Massachusetts Tree Wardens' & Foresters' Association

dcr Massachusetts

Massachusetts Urban & Community Forestry Program

TREES AND ROADS WORKING TOGETHER

Trees are an important part of a community's infrastructure that can sometimes be damaged during municipal construction and maintenance activities, leading to hazardous conditions and increased costs. Tree Wardens and Public Works staff can work together to protect trees and minimize costs to the community.

Roadside community trees are a vital public utility.

Just as roads perform a necessary transportation function, wires conduct electricity, and pipes move water, roadside trees provide a host of community benefits. Community trees help reduce storm-water flows and mitigate flooding, filter the air, reduce heating and cooling costs, contribute to property values, add to community character, and beautify the landscape -- strengthening the social and economic vitality of our towns and cities.

Community trees are under the control of the Tree Warden.

Under Massachusetts General Law Chapter 87:

- All trees within the public way are defined as public shade trees.
- The Tree Warden is responsible for the care, control, protection, and maintenance of all public shade trees, and shall enforce the provisions of law for protecting these trees.
- No other person may plant, trim, cut, or remove a public shade tree without permission of the Tree Warden. *This includes the cutting of roots during construction.*
- **No person, including the Tree Warden, may remove any healthy tree, greater than one and one half inches in diameter, without a public hearing.**

The importance of roots and bark

Roots and bark are two vital organs for trees. Roots take up water, oxygen and nutrients, and provide stability. Bark transports water, food, and nutrients to the rest of the tree. If these are damaged, a tree will decline and may die.

- 90% of tree roots are in the top two feet of soil.
- 60% of the roots are outside the "dripline" of the tree.
- The inner bark serves as part of the vascular system for the tree.
- Roots are rarely observed under existing paved roads.

Some suggested guidelines for protecting trees

Prior to construction or road improvement activities:

- Be involved early. The Tree Warden should have a process for being informed of upcoming construction activities early in the planning stages.
- The Tree Warden and Public Works staff should meet on site to discuss the type of work to be completed and collaboratively develop strategies for to protecting desirable trees and groupings of trees.

TREES AND ROADS WORKING TOGETHER

Protect roots:

- Ideally, steps should be taken to protect the “critical root zones” of desirable trees.
- The radius of the “critical root zone” is determined by multiplying the diameter of a tree in inches, by feet. In other words, a 10-inch diameter tree will have a 10-foot radius “critical root zone.” Do not just protect to the “dripline” of the tree.
- Roots are rarely observed to travel under existing paved roads.
- The “critical root zone” should be protected by placing hard fencing around the zone. Snow fencing is often moved.
- Within this protected zone, there should be no activity, storage, or soil compaction.
- Avoid any kind of trenching or soil disturbance close to the trunk of the tree.
- It may not always make sense to protect the full “critical root zone,” especially for roadside trees. In these cases, the Tree Warden and Highway staff should work together to establish a “zone of tree protection” that makes sense.

Protect the bark:

- If the “critical root zone” is protected, then the bark should be protected. However, sometimes bark stills gets damaged during construction and maintenance activities.
- Work with staff and contractors to be sure everyone understands the importance of bark and the need to protect bark from nicks, scrapes, and gouges.
- Fences and well-defined tree protection zones can help protect bark.
- You may want to additionally mark or flag trees that could be in danger of injury from equipment, including trees that may be damaged during routine snow removal.

Protect against changes in grade:

- Changes in grade can be as damaging to tree roots as cutting, trenching, or soil compaction, and may eventually lead to tree decline and death.
- Make sure that the grade is not changed within the identified tree protection zone.
- You may want to inspect and restore changes in grade that result from normal road maintenance activities, such as snow removal and road re-grading.

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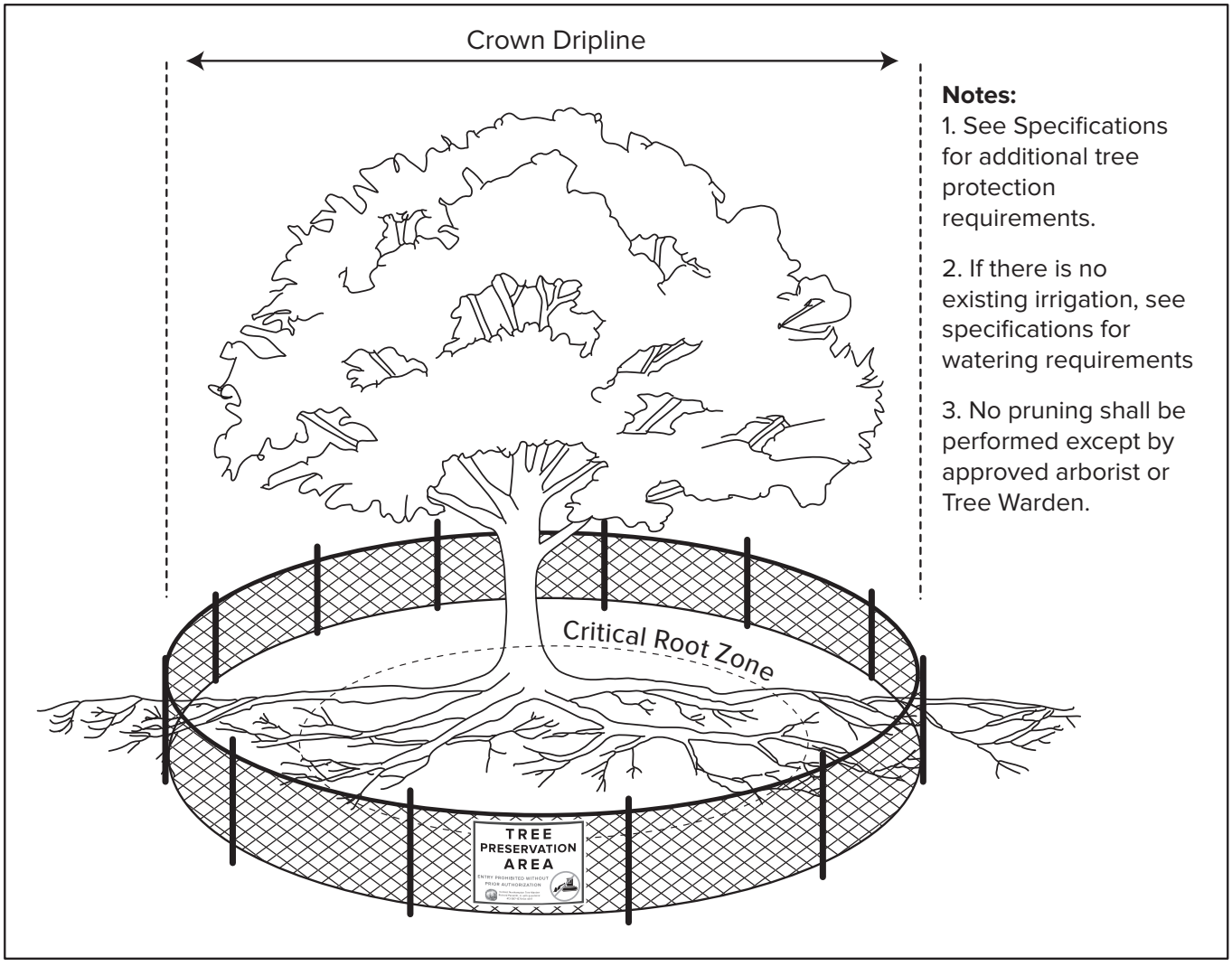
DRIPLINE METHOD OF ESTABLISHING A TPZ

The Critical Root Zone (CRZ) is the area around the trunk that contains roots that are vital for the well-being and strength of trees. The Tree Protection Zone (TPZ) is an area defined by a certified arborist that surrounds a trunk with the purpose of protecting the roots and soil within the critical root zone and beyond to ensure future tree stability and well-being.

There are many techniques for determining the size of the CRZ. For the purpose of this document, the drip line method will be used. Alternatives to this method will be required to have prior approval from the Tree Warden.

The CRZ shall be determined prior to construction activity. Other trees that are identified to be in close proximity to the CRZ may be required to have their roots protected as well, following these guidelines.

Trees within the TPZ are to be watered at a minimum of 20 gallons once weekly between March 1 and October 30 to best preserve existing trees during the demolition and construction processes. More frequent watering may be required for larger trees and during periods of drought. Watering shall be done in a manner that there should not be standing water around the tree.



Dripline method of establishing a Tree Protection Zone (TPZ)

TREE FENCING PROTECTION

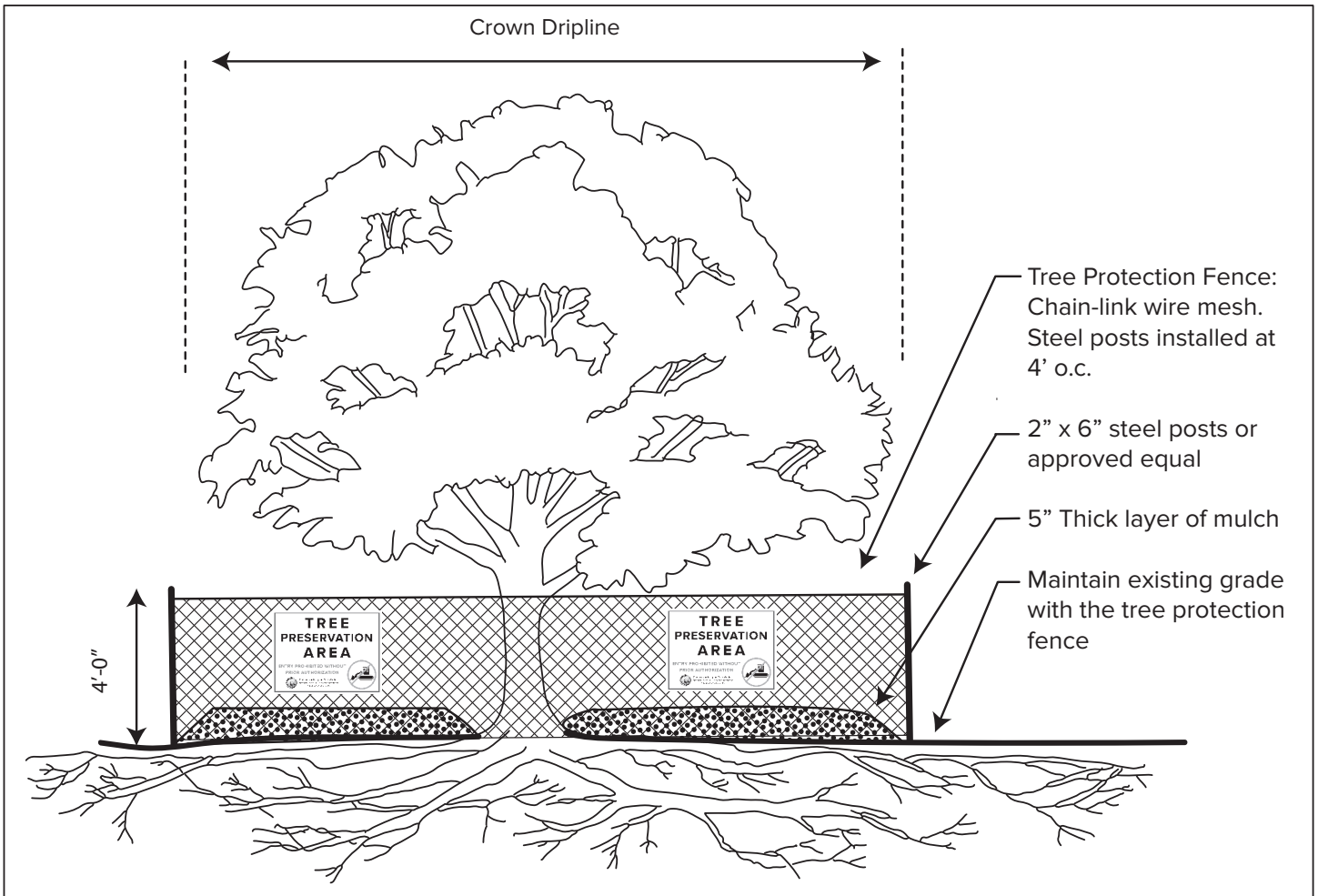
Tree Protection Zone (TPZ) fencing shall be sturdy and visible to help establish the area to be protected.

Fencing shall be chain-link or wire mesh with a minimum height of four (4) feet from the existing soil grade. Fence shall be stretched tightly between posts to prevent any unauthorized entry into the TPZ. Plastic construction or snow fencing are not an acceptable alternative to the chain-link or wire mesh.

Posts shall be solid steel in nature and placed at a minimum of four (4) on center.

Minimum of two (2) signs shall be posted on the fencing identifying Tree Preservation Area. Signs can be obtained from the Tree Warden.

Damage that may occur to the tree fencing protection during construction shall be repaired as soon as possible to prevent any damage within TPZ.



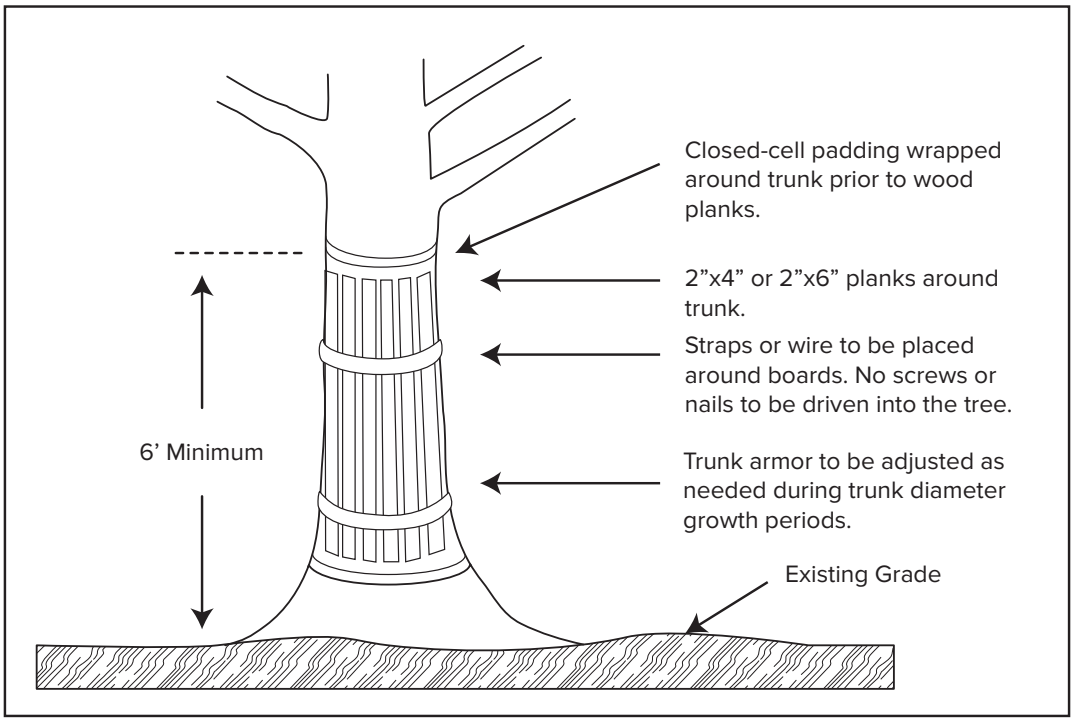
Notes:

1. See specifications for additional tree protection requirements.
2. No pruning shall be performed except by approved arborist or Tree Warden.
3. No equipment shall operate inside the protective fencing including during fence installation and removal.
4. Any modifications to the Tree Protection Plan must be approved by the Tree Warden.

Tree Fencing Protection

TREE ARMOR

When construction activities are close to the trunk of a tree or buttress roots it increases the chance of mechanical damage. When this is the case, those parts of the tree shall be protected.



Tree Armor Detail

TREE PRESERVATION AREA SIGN

This sign is required to be posted twice on all Tree Preservation Area fences.

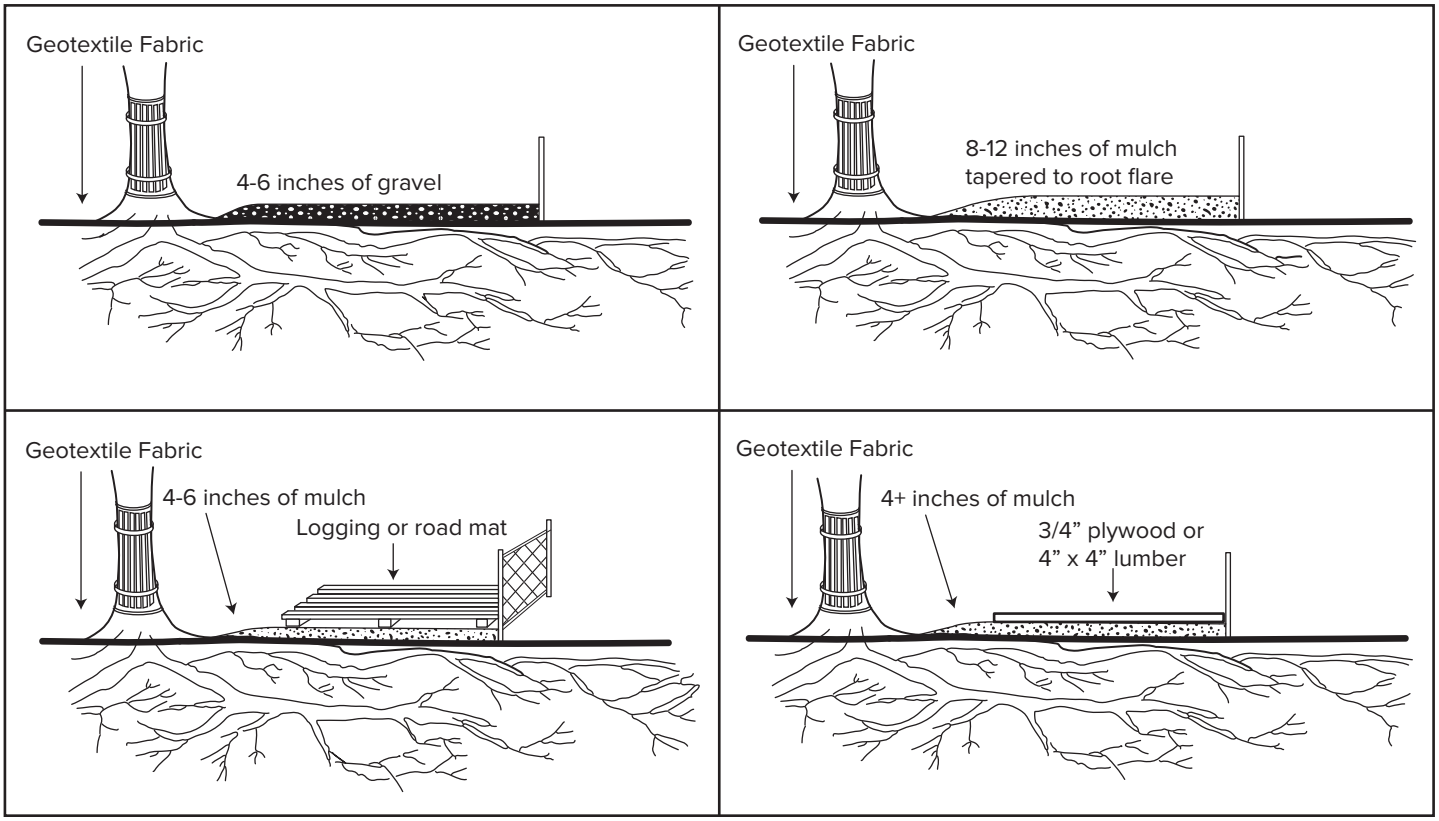
Contact Northampton Tree Warden, Richard Parasiliti, Jr. to obtain sign: 413-587-1570 Ext 4317

ROOT AND SOIL PROTECTION WITHIN THE TPZ

When traffic cannot be kept outside the TPZ during construction activities, there are methods to disperse equipment load, reduce the threat of compaction, and root damage.

Materials that are placed in the TPZ for root and soil protection shall be removed once the threat of soil or root damage has passed.

Tree protection plans and implementation should follow American National Standards Institute (ANSI) A300 standards for tree care practices.



Options for Soil and Root Protection Within the TPZ

FURTHER REFERENCES

UMASS Extension Guide for Planting Trees and Shrubs
https://ag.umass.edu/landscape/fact-sheets/guidelines-for-planting-trees-shrubs

Cornell University Urban Horticulture Institute (Detailed List of Recommended Urban Trees and other resources)
http://www.hort.cornell.edu/uhi/

Vermont Tree Selection Guide
http://fpr.vermont.gov/sites/fpr/files/Forest_and_Forestry/Community_Forests_and_Trees/Library/VTTree%20Guide.pdf

UCONN Plant Database
http://hort.uconn.edu/

Missouri Botanical Garden Plant Finder
http://www.missouribotanicalgarden.org/plantfinder/plantfindersearch.aspx

Avoiding Tree Damage During Construction
https://www.treesaregood.org/portals/0/docs/treecare/AvoidingTreeDamage.pdf

Preserving Trees in Construction Sites: Mississippi State University Extension
http://extension.msstate.edu/publications/publications/preserving-trees-construction-sites