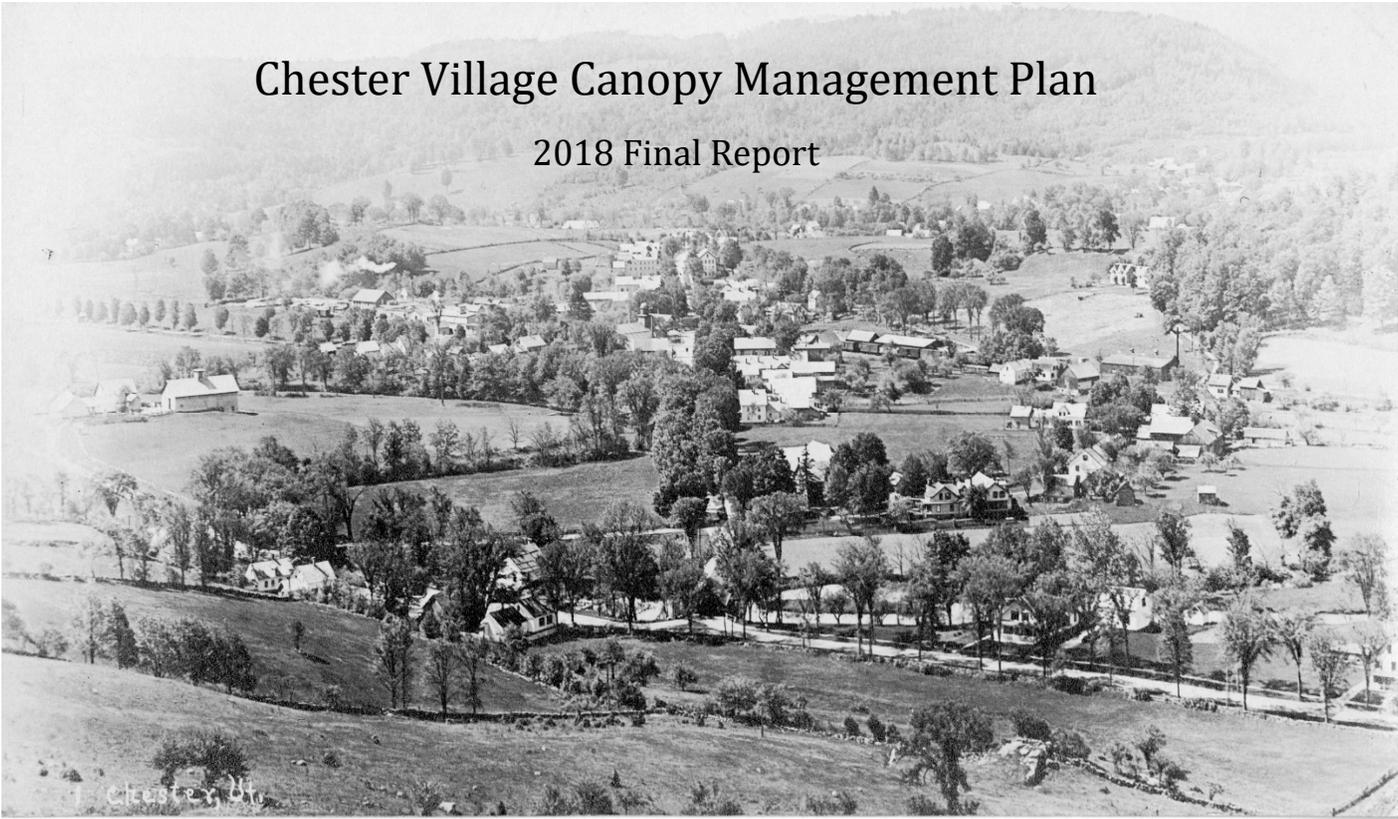


Chester Village Canopy Management Plan

2018 Final Report



Chester Village Canopy Management Plan

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Chester Village Canopy Management Plan

January 24, 2018

The intent of this planning effort was to take a closer look at the existing street trees in the Town of Chester, assess their condition, and assemble a maintenance and planting plan. The included concepts and details build and elaborate upon an earlier tree inventory prepared for the Town of Chester and the Chester Conservation Committee by the Vermont Urban & Community Forestry Program and the UVM Extension. This latest effort was funded by a grant from the Department of Forests, Parks, and Recreation.

A committee of interested citizens contributed in numerous ways throughout the Chester Village Canopy Management Plan and were critical in developing the overall project. The committee included Lillian Willis, Nancy Chute, Gary King, and Executive Assistant Julie Hance. In addition, SWRPC provided the maps. Local Architectural Historian Hugh Henry shared photos of Chester's Historic tree-lined streets, some of which are included.

The design process began by identifying trees for removal, trees in need of maintenance, and finally selecting specific trees for planting. The drawings note common name for the chosen plants, while the report includes the common name, the Latin name, and the tree's individual characteristics.

The current road-side condition creates an environment that can be challenging for native plants. Compacted poor soils, salt spray, and excessive heat often create conditions that are different from the surrounding native Vermont landscape. Wherever possible we selected native tree varieties. Some non-native plants are included in the plan where tough urban-like conditions required flexibility. A diverse selection of trees has been recommended. This enables the trees to be specific for each individual site and will be less susceptible to disease and pests in the future, making the overall planting effort more resilient.

Selecting and planting the right tree in the right space is the first step in restoring Chester's tree-lined streets. The second phase is to ensure that the trees grow, thrive, and are maintained properly. A watering guide is included and should help the plants get established in the first few years. A way to map, catalog, and share maintenance information about the trees is offered in an on-line database with available tree tags.

Finally, we would like to encourage the Town of Chester to begin a composting program to improve the organic content of available top soil for these types of projects.

We hope you find this report informative and inspiring.

Sincerely,

Scott Wunderle,

Courtney Venable,

Patrick Jarvis,

Lauren Ingersoll











Chester Village Canopy Management Plan

Tree Selections Report

Cited Sources:

The majority of the enclosed information is paraphrased from “Manual of Woody Landscape Plants” by Michael A. Dirr (Stipes Publishing L.L.C, revised 1998). It is presented in abbreviated form expressly to inform decisions about appropriate plant choices in difficult to moderately difficult growing conditions. Some additional selections are included that fit within the cultural or historical significance of the project.

Missouri Botanical Garden ‘Plant Finder’

<www.missouribotanicalgarden.org/plantfinder/plantfindersearch.aspx>

Additional Resources:

“Recommended Urban Trees: Site Assessment and Tree Selection for Stress Tolerance.”
Dept. of Horticulture Cornell University, (Urban Horticulture Institute, 2009).

Morton Arboretum

<www.mortonarb.org/trees-plants>

UConn College of Agriculture, Health, and Natural Resources ‘Plant Database’

<www.hort.uconn.edu/plants>

** Both of the Morton Arboretum and UConn Plant Database websites include detailed information on specific cultivar selection.*

Section 1: Native Trees

Aesculus glabra (Ohio Buckeye)

Acer rubrum (Red Maple)

Acer saccharum (Sugar Maple)

Acer saccharinum (Silver Maple)

Amelanchier arborea (Downy Serviceberry or Shadbush)

Betula populifolia (Gray or Poplar Birch)

Betula nigra (River Birch)

Carpinus caroliniana (American Hornbeam or Ironwood)

Carya glabra (Pignut Hickory)

Carya ovata (Shagbark Hickory)

Catalpa speciosa (Northern Catalpa)

Celtis occidentalis (Common Hackberry)

Cercis canadensis (Eastern Redbud)

Chionanthus virginicus (White Fringetree)

Cladrastis kentukea (American Yellowwood)

Crataegus crus-galli (thornless selection) (Cockspur Hawthorn)

Crataegus viridis (Green Hawthorn)

Gleditsia triacanthos (Thornless Common Honeylocust)

Gymnocladus dioica (Kentucky Coffeetree)

Halesia tetraptera (Carolina Silverbell)

Juglans nigra (Black Walnut)

Liriodendron tulipifera (Tuliptree)

Malus (Flowering Crabapple)

Nyssa sylvatica (Black Tupelo or Sweetgum)

Ostrya virginiana (American Hophornbeam)

Pinus strobus (White Pine)

Picea glauca (White Spruce)

Platanus occidentalis (Sycamore, Buttonwood or American Planetree)

Quercus alba (White Oak)

Quercus macrocarpa (Bur Oak)

Quercus palustris (Pin Oak)
Quercus prinus (Chestnut Oak)
Quercus rubra (Red Oak or Northern Red Oak)
Sassafras albidum (Common Sassafras)
Ulmus americana (American Elm)

Section 2: Non- Native Selections

Acer campestre (Hedge Maple or Field Maple)
Acer tataricum (Tatarian Maple)
Carpinus betulus (Common Hornbeam)
Castanea mollissima (Chinese Chestnut)
Cornus kousa (Kousa Dogwood)
Cornus mas (Cornelian Cherry Dogwood)
Ginkgo biloba (Maidenhair Tree)
Maackia amurensis (Amur Maackia)
Magnolia x soulangiana (Saucer Magnolia)
Parrotia persica (Persian Parrotia or Persian Ironwood)
Picea abies (Norway Spruce)
Platanus x acerifolia (London Planetree)
Sophora japonica (Japanese Pagoda Tree or Scholar-tree)
Sorbus alnifolia (Korean Mountainash)
Tilia cordata (Littleleaf Linden)
Tilia tomentosa (Silver Linden)
Ulmus parvifolia (Chinese Elm)
Zelkova serrata (Japanese Zelkova)

Native Trees

Aesculus glabra (Ohio Buckeye)

- hardiness - zone 4 to 7
- size - 20 to 40 feet high and wide
- rate - medium; 7 to 10 feet over 6 to 8 year period
- native habitat - Pennsylvania to Nebraska south to Kansas and Alabama
- habit - rounded to broad rounded in outline; low branched with branches bending downward then up again at the tips; handsome palmate foliage; very dense growth
- diseases and insects - leaf scorch in late summer - margins of leaves become brown and curled; leaf blotch, powdery mildew, wood rot, anthracnose, canker, among others
- culture - transplant B&B into deep, well-drained, slightly acid soil; tends to develop leaf scorch in droughty situations; found in the wild in bottomlands along the banks of rivers; full sun to part shade; prune in early spring
- notes - the value of this species is best as a native tree in a wild or natural setting; good tree for large park or large area; not recommended for street tree or residential landscape; *A. flava* could be preferable to the *A. glabra* for landscape situations

Acer rubrum (Red Maple)

- hardiness - zone 4 to 9
- size - 40 to 60 feet high and wide (can reach 100 to 200 feet in the wild)
- rate - medium to fast; 10 to 12 feet in 5 to 7 years
- native habitat - Newfoundland to Florida, west to Minnesota, Oklahoma and Texas
- habit - pyramidal or elliptical in youth, developing ascending branches which results in irregular, ovoid or rounded crown; variable over its range and numerous cultivars reflect the degree of variation
- diseases and insects - No serious insect or disease problems; leafhoppers, borer and petiole borer
- culture - transplants readily as small specimen bare root, otherwise B&B for larger specimens; best moved when dormant; very tolerant of wide range of soils but prefers slightly acid moist conditions; one of the first trees to color in fall; shows chlorosis in high pH soils; not particularly urban tolerant although planted quite extensively in such settings

- notes - excellent specimen tree for lawn, park or street; doesn't tolerate pollution; superior to Silver Maple due to cleaner foliage, stronger wood and superior fall color; the cultivars are preferred to species if good consistent red fall color is desired
- possible cultivar choices:
 - x fremanii 'Autumn Blaze' (Red Maple cultivar)
 - 'Autumn Flame'
 - 'Red Sunset'

Acer saccharum (Sugar Maple)

- hardiness - zone 4 to 8
- size - 60 to 75 feet high; 30 to 50 feet wide
- rate - slow; possibly medium in youth
- native habitat - Eastern Canada to Georgia, Alabama, Mississippi and Texas
- habit - upright-oval to rounded with usually quite dense foliage
- diseases and insects - no serious insect or disease problems; Verticillium wilt, pear thrips; physiological concerns - leaf scorch due to excessive drought
- culture - transplant B&B; prefers well drained, moderately moist, fertile soils, somewhat tolerant to range of pH; does not perform well in tight or compacted situations; susceptible to salt damage
- notes - one of the best larger lawn trees; suffers from extended periods of heat; beautiful fall color and growth habit; may be used as a street tree as long as it can be located on a street and in a location where road salt, soil compaction and pollution will not be significant problems

Acer saccharinum (Silver Maple)

- hardiness - zone 3 to 9
- size - 50 to 70 feet wide; 30 to 50 feet wide
- rate - fast; 10 to 12 feet in 4 to 5 years
- native habitat - Quebec to Florida, to Minnesota, Nebraska, Kansas, Oklahoma and Louisiana
- habit - upright with strong spreading branches; forms oval to rounded crown with pendulous branches with age
- diseases and insects - no serious insect or disease problems; anthracnose, leaf spot, tar spot, bacterial leaf spot, powdery mildew, Verticillium wilt, forest tent caterpillar, green striped maple worm, maple leaf cutter, among others; physiological concerns - scorch due to lack of water

- culture - transplants well bare-root or B&B; tolerant of a wide range of soils; will cause sidewalks to buckle and drain tiles to clog because of large, vigorous root system; one of the best trees for poor soils
- notes - use should be tempered as it can become a liability with age due to size; perhaps best sited in areas of poor soil or low moisture conditions where other stronger wooded trees will not grow

Amelanchier arborea (Downy Serviceberry or Shadbush)

- hardiness - zone 4 to 9
- size - 15 to 25 feet high; variable width
- rate - medium; 9 to 10 feet in 8 to 10 years
- native habitat - Maine to Iowa, south to northern Florida and Louisiana
- habit - multi-stemmed shrub or small tree with rounded crown of many small branches; often takes on rounded form in old age; colonizing/ suckering habit
- diseases and insects - no serious problems; rust, leaf spot, witches broom (fungal), leaf blight, fire blight, powdery mildew, fruit rot, leaf miners, borer, pear leaf blister mite, among others; many of the newer cultivars are free of any serious diseases or insects
- culture - transplant B&B or container grown plants into moist, acid, well-drained soil; found in wide variety of settings in the wild including mountain slopes where conditions can be drier; performs in wide variety of soils; not particularly pollution tolerant; not reliable under high stress conditions; rarely require pruning
- notes - best in naturalistic planting or shrub borders; beautiful shape and berries in winter; four-season interest and edible fruit

Betula populifolia (Gray or Poplar Birch)

- hardiness - zone 3 to 6 (7)
- size - 20 to 40 feet high; 10 to 20 feet wide
- rate - medium; 2 feet per year over a ten-year period
- native habitat - Nova Scotia to Ontario to Delaware
- habit - narrow, irregularly open, conical crown with slender branches ending in fine stems; multi-stemmed and colonizing in the wild but can be grown single stem; short lived - 10 to 25 years
- diseases and insects - cankers, aphids, leaf miners, resistant to bronze birch borer

- culture - transplant B&B in spring; relishes the poorest soils; will grow on rocky, gravelly sites; tolerant wet and dry conditions; intolerant of competition; will develop chlorosis in extremely high pH
- notes - good for naturalizing; could be used in poor soils along highways and other difficult sites; valuable in developing rough sites where few plants survive; in cool northern climates, this gray birch may naturalize by self-seeding and root suckers to form attractive stands; it also can be effective as a landscape tree

Betula nigra (River Birch)

- hardiness - zone 3b to 9
- size - 40 to 70 feet high and wide
- rate - medium to fast; 30 to 40 feet over 20-year period
- native habitat - Massachusetts to Florida, west to Minnesota and Kansas
- habit - pyramidal to oval-headed in youth; often rounded in maturity; usually divided into several large arching branches close to the ground; can be grown as multi-stemmed specimen
- diseases and insects - the most trouble-free birch; occasional leaf spot in moist years, aphids; bronze birch borer resistant
- culture - transplants well as container or field grown; best adapted to moist soils but will survive in drier soils; prefers acid soil; birches are “bleeders” best not to prune in summer; most adaptable birch and known for its tolerance to heat, however it is not drought tolerant
- notes - well suited to areas that are wet a portion of the year yet may become dry in summer and fall; known for handsome shedding bark

Carpinus caroliniana (American Hornbeam or Ironwood)

- hardiness - zone 3b to 9
- size - 20 to 30 feet high; 20 to 30 feet wide
- rate - slow; 8 to 10 feet over ten years
- native habitat - Nova Scotia to Minnesota south to Florida and Texas
- habit - small to medium multi-stemmed; bushy shrub to single stemmed tree with wide spreading, flat or rounded top; often irregular crown
- disease and insects - none significant; leaf spots, cankers, twig blight, maple Pneumococcus scale

- culture - somewhat difficult to transplant - best in winter to early spring; performs best in deep, rich, moist, slightly acidic soils but will grow in drier sites; adaptable and can be used in landscape situations; prefers some shade
- notes - an attractively shaped, low-maintenance understory tree for shady/partly shady sites; has some characteristics similar to beech; can tolerate occasional flooding; “might be worth a longer look in man-made landscapes” and “choice plant for American gardens” – Michael Dirr

Carya glabra (Pignut Hickory)

- hardiness - zone 4 to 9
- size - 50 to 60 feet high; 25 to 35 feet wide
- rate - medium
- native habitat - Maine to Ontario, south to Florida, Alabama and Mississippi
- habit - tapering trunk with regular, open, oval head; slender contorted branches
- disease and insects - no serious insect or disease problems; hickory bark beetle, pecan weevil, borers and twig girdler can be problems in some areas of its range; white heart rot, anthracnose, leaf blotch, powdery mildew, leaf spot, cankers, catkin blight, crown gall and scab are occasional diseases
- culture - immense tap-root makes transplanting difficult; found along hillsides and ridges in well drained to dry, fairly rich soils
- notes - an absolutely beautiful tree particularly in autumn - with rich golden fall foliage

Carya ovata (Shagbark Hickory)

- hardiness - zone 4 to 8
- size - 60 to 80 feet high
- rate - slow
- native habitat - Quebec to Minnesota south to Georgia and Texas
- habit - straight cylindrical trunk with oblong crown with ascending and descending branches
- disease and insects - no serious insect or disease problems; hickory bark beetle, pecan weevil and twig girdler can be problems in some areas of its range; anthracnose and leaf spot are occasional diseases; large trees can produce considerable litter through twig, leaf and fruit (nut) drop
- culture - prefers rich well-drained soils but is highly adaptable; transplanting can be difficult due to deep rooted nature
- notes - seldom available in nursery trade

Catalpa speciosa (Northern Catalpa)

- hardiness - zone 4 to 8 (9)
- size - 40 to 60 feet high; 20 to 40 feet wide
- rate - medium to fast; 15 feet over 7- 8 years
- native habitat - Southern Illinois and Indiana to Tennessee and northern Arkansas
- habit - narrow, open, irregular, oval crown; bold rugged outline
- diseases and insects - no serious insect or disease problems; leaf spots, powdery mildew, Verticillium wilt, twig blight, root rot, Comstock mealybug, catalpa midge, among others; generally does not succumb to disease or insects
- culture - transplant B&B; very tolerant of diverse soil conditions but prefers deep fertile soils; withstands wet or dry and alkaline conditions; withstands extremely hot, dry conditions
- notes - wood is quite brittle, so frequently small branches fall in wind and ice storms; has a place in difficult areas

Celtis occidentalis (Common Hackberry)

- hardiness - zone 3 to 9
- size - 40 -60 feet high; 40 to 60 feet wide
- rate - medium to fast; 20 to 30 feet over 10 to 15-year period
- native habitat - Quebec to Manitoba, south to North Carolina, Alabama, Georgia and Oklahoma
- habit - weakly pyramidal in youth, with broad top of ascending branches with age; not unlike the American Elm but not nearly as aesthetic
- diseases and insects - leaf spots, witches broom, powdery mildew, hackberry nipple gall, mourning cloak butterfly and scales
- culture - transplanted bare-root or B&B; prefers rich moist soils but in dry, heavy, sandy or rocky soils; withstands acid or alkaline conditions; tolerant of wet or dry soils; urban tolerant
- notes - performs admirably well under adverse conditions

Cercis canadensis (Eastern Redbud)

- hardiness - zone 4 to 9
- size - 20 to 30 feet high; 25 to 35 feet wide
- rate - medium; 7 to 10 feet in 5 to 6 years
- native habitat - New Jersey to northern Florida, west to Missouri and Texas and northern Mexico
- habit - small tree with trunk typically dividing close to the ground; forms a spreading, flat-topped to rounded crown; pendulous heart-shaped leaves
- disease and insects - canker, leaf spots and Verticillium wilt; tree hoppers, caterpillars, scale and leaf hoppers; Xylaria polymorpha root rot may play a role in urban trees
- culture - transplant B&B or container grown tree spring or fall into moist, well-drained, deep soils; although does exceedingly well in many soil types except constantly wet ones; adaptable to any soil pH; will suffer from excessive stress - due to lack of water, too much moisture or injury
- notes - southern sourced trees are not cold hardy in northern areas, best to source trees from northern areas - such as Minnesota; one of the most beautiful of native trees; cultivars should be given preferential status for garden use

Chionanthus virginicus (White Fringetree)

- hardiness - zone 4 to 9
- size - 25 to 30 feet high and wide
- rate - slow; 8 to 10 feet in ten years
- native habitat - Southern New Jersey to Florida and Texas
- habit - large shrub or small tree with spreading open habit; often wider than high; range of shapes and variable stem characteristics; bushy and robust
- disease and insects - none serious; occasionally scale, borers; some leaf spot, powdery mildew
- culture - transplant in spring - container or B&B; prefers deep, fertile, acid soils but extremely adaptable; pruning is rarely required; in the wild most commonly found along banks or bordering swamps
- notes - beautiful specimen shrub/ small tree; good in groups, borders or near buildings; spectacular in flower; adaptable and quite air pollution tolerant; intolerant of prolonged dry conditions

Cladrastis kentukea (American Yellowwood)

- hardiness - zone 4 to 8
- size - 30 to 50 feet high; 40 to 55 feet wide
- rate - medium; 9 to 12 feet over 8 to 10-year period
- native habitat - North Carolina to Kentucky and Tennessee
- habit - low branching with a broad, rounded crown or delicate branches
- diseases and insects - very few problems associated with this tree; Verticillium wilt has been reported
- culture - transplant form B&B; prefers well-drained soil; tolerates a range of pH conditions; prune only in summer - plant will "bleed" profusely if pruned in winter or spring; can develop weak crotches if not pruned carefully when young to develop a strong central leader; tolerates some dry soils once established; best sited in a location protected from strong winds
- notes - excellent tree for flowers and foliage; medium size makes it ideal for smaller properties; beautiful yellow fall foliage and winter bark; roots go deep, so other plants may be easily grown underneath

Crataegus crus-galli (thornless selection) (Cockspur Hawthorn)

- hardiness - zone 4 to 7
- size - 20 to 30 feet high; 20 to 35 feet wide
- rate - slow to medium; 10 to 14 feet over 6 to 10 years
- native habitat - Quebec to North Carolina and Kansas
- habit - broad, rounded low-branched tree with wide spreading, densely set horizontal branches
- diseases and insects - pests and diseases are a problem with most hawthorns; fire blight, leaf blight, rusts, leaf spots, powdery mildew, scab, aphids, borers, western tent caterpillars, among others; severely affected by pests
- culture - transplant B&B in spring; tolerant of many soils but should be well drained; pH adaptable, although some trees can suffer from chlorosis; tolerates urban pollutants; prune winter/ early spring;
- notes - good fruiting not preferred by birds so they remain intact and ornamental for a long time; make sure to select thornless variety

Crataegus viridis (Green Hawthorn)

- hardiness - zone 4 to 7
- size - 20 to 35 feet high and wide
- rate - medium
- native habitat - Maryland and Virginia to Illinois, Iowa, Texas and Florida
- habit - rounded, sharply thorny, spreading, dense tree
- diseases and insects - one of the most disease-resistant hawthorns; less susceptible to rust than other hawthorns
- culture - easily grown in average, dry to medium, well-drained soils; tolerates light shade and drought; moist, rich, fertile soils may encourage unwanted succulent growth; tolerant of urban pollution.
- notes - one of the most outstanding hawthorns for landscape use; selection with lovely rounded habit and distinct gray-green bloomy stems; lustrous medium green foliage with purple to scarlet fall color; this variety does have thorns, although small and inconspicuous, so choose planting location accordingly
- choice cultivars - 'Winter King' is a popular, more disease-resistant cultivar that is noted for its profuse bloom of flowers, larger fruits, silvery-barked stems and more attractive fall color; unlike most hawthorns, this cultivar (as well as the species) is largely spineless, with only occasional small thorns (to 1.5" long)

Gleditsia triacanthos (Thornless Common Honeylocust)

- hardiness - zone 4 to 9
- size - tremendously variable but in the range of 30 to 70 feet high and wide
- rate - fast; will grow 2 feet or more per year over a ten-year period
- native habitat - Pennsylvania to Nebraska, south to Texas and Mississippi
- habit - short trunk with open, spreading crown; a delicate and sophisticated silhouette
- disease and insects - leaf spot, cankers, witches broom, powdery mildew, rust, honey locust borer, midge pod gall, webworm, spider mites; the insects and diseases have caught up to this tree in urban landscapes due to overuse and monoculture plantings; a tree not without its problems
- culture - readily transplanted; withstands a wide range of conditions although reaches full potential on rich, moist bottomlands; tolerant of drought and salt; high pH; prune in fall
- notes - one of our most adaptable native trees; may need a replacement for this tree if serious disease and insect problems persist

Gymnocladus dioicus (Kentucky Coffeetree)

- hardiness - zone 3 b to 8
- size - 60 to 75 feet high; 40 to 50 wide
- rate - slow to medium; growing 12 to 14 feet over a 10-year period
- native habitat - New York and Pennsylvania to Minnesota, Nebraska, Oklahoma and Tennessee
- habit - low-branched with narrow head; ascending and spreading branches form a broad rounded crown
- disease and insects - none serious
- culture - transplant B&B into deep, rich, moist soil for best growth - however adaptable to a wide range of soil conditions such as limestone, drought and city conditions; prune in winter or early spring; wood can be somewhat brittle
- notes - good adaptability - tolerates a wide range of soils and moderate drought; a choice trees for parks and other large areas; bold winter habit and handsome bark; would make a valuable addition to the list of “tough” trees; leaves and seeds are poisonous to man and livestock

Halesia tetraptera (Carolina Silverbell)

- hardiness - zone 4 to 8 (9)
- size - 30 to 40 feet high; 20 - 35 feet wide
- rate - medium; 9 to 12 feet over 6 to 8 years
- native habitat - West Virginia, Ohio, Illinois to Florida and eastern Oklahoma
- habit - low branched tree with relatively narrow head; ascending branches and broad rounded crown
- disease and insects - exceptionally pest resistant
- culture - container transplants have more success due to “stringy” roots; prefers rich, well-drained, moist, acidic soil; will become chlorotic in high pH soils
- notes - beautiful specimen tree with spring bell shaped flowers

Juglans nigra (Black Walnut)

- hardiness - zone 4 to 9
- size - 50 to 75 feet high and wide
- rate - relatively slow
- native habitat - Massachusetts to Florida and west to Minnesota and Texas
- habit - crown is oval to rounded and somewhat open; full, well-formed trunk which is usually devoid of branches lower at the base
- disease and insects - no serious insect or disease problems; potential diseases include anthracnose, bacterial blight, root rot, canker, leaf spot and shoot dieback; watch for aphids, fall webworm and a variety of foliage chewing caterpillars.
- culture - can be difficult to transplant due to extensive taproot; prefers rich, deep, moist soils; can tolerate dry soils but may grow more slowly;
- notes - nuts can be quite messy in fall so may be inappropriate as a street tree planted close to the road

Liriodendron tulipifera (Tuliptree)

- hardiness - zone 4- 9
- size - 70 - 90 feet high; 35 - 50 feet
- rate - fast; 15 to 20 feet over 6 to 8-year period
- native habitat - Massachusetts to Wisconsin, south to Florida and Mississippi
- habit - pyramidal in youth maturing to oval rounded; several curvy branches constituting the framework;
- disease and insects - no serious insect or disease problems; cankers, leaf spots, powdery mildew, root and stem rot, Verticillium wilt, leaf yellowing, aphid, scale and Tuliptree spot gall; leaf yellowing can be a problem when trees do not receive adequate moisture
- culture - transplant B&B in spring into deep, moist, well-drained soil; pH adaptable although prefers slightly acidic soil; has been used in street tree plantings but can develop leaf scorch or simply dies over time
- notes - not for small residential property or streets; may break in ice or severe storms; beautiful yellow fall foliage and showy flowers; one of the tallest eastern native trees;

Malus (Crabapple)

- hardiness - zone 4 to 7
- size - ranging from 10 to 25 feet - some larger
- rate - mostly medium - depend on cultivar
- native habitat - temperate regions of North America, Europe and Asia
- habit - uniquely structured branches provide good winter architecture; range in shape from low and mounding to narrow upright or pendulous types; 20 to 30 species of crabapple in temperate regions of North America; at least 100 to 200 cultivated types grown in nurseries
- diseases and insects - Asiatic forms more resistant to pests/disease; fireblight, cedar apple rust, apple scab, canker, scale, borers, aphids, Japanese beetles; choosing resistant cultivars helps mitigate these potential problems
- culture - adaptable to varying soil conditions but prefer heavy loam; soil, regardless of soil type should be well-drained, moist and acid; require little pruning but best done before early June; pruning should be done to remove sucker-growth, open center of plant to light and air and to shape tree
- notes - few other trees that approach the beauty of a crabapple in full flower; valued for foliage, fruit, variations in habit and size and for their fleeting but beautiful flowers; by using different species and cultivars the flowering period can be extended

Nyssa sylvatica (Black Tupelo or Sweetgum)

- hardiness - zone 4 to 9
- size - 30 to 50 ft high; 20 to 30 wide
- rate - slow to medium; 12 to 15 feet over 10 - 15 year period
- native habitat - Maine, Ontario, Michigan to Florida and Texas
- habit - pyramidal when young with densely set branches, some of which are pendulous; older trees have horizontal branches that form irregularly rounded or flat-topped crown
- diseases and insects - no serious insect or disease problems; cankers, leaf spots, rust, tupelo leaf miner and scale
- culture - prefers moist, well drained, acid, deep soils; however, in the wild it is found on dry mountain ridges, burned over forest land, abandoned fields, and in cold mountain swamps; difficult to transplant because of taproot, best to transplant B&B in early spring; although small container grown will reestablish well; does not tolerate high pH; full sun or part shade with sheltered location; prune in fall

- notes - excellent specimen tree, acceptable street tree for residential areas; best native tree for fall color; adaptable to various soil and moisture conditions; provenance plays an important role in regional performance

Ostrya virginiana (American Hophornbeam)

- hardiness - zone 3b to 9
- size - 25 to 40 feet high; 20 to 40 feet wide
- rate - slow; 10 to 15 feet over 15-year period
- native habitat - Cape Breton, Ontario to Minnesota, south to Florida and Texas
- habit - graceful small to medium sized tree with many horizontal or drooping branches usually forming a rounded outline, somewhat pyramidal in youth
- diseases and insects - none serious
- culture - cool, moist, well-drained, slightly acid soil; often found in the wild growing in rather dry, gravelly or rocky soils; transplant from B&B or container in early spring; full sun to part shade; prune in winter or early spring; somewhat slow to establish
- notes - tree of lawns, parks, naturalized areas and possibly streets; has performed well in city plantings and narrow tree lawns; can look tired or tatty in late summer

Pinus strobus (White Pine)

- hardiness - zone 3 to 7(8)
- size - 50 to 80 feet high; 20 to 40 feet wide
- rate - fast - 50 to 75 feet in 25 to 40 years
- native habitat - Newfoundland to Manitoba, south to Georgia, Illinois and Iowa
- habit - in youth, symmetrical pyramid with soft needle-y appearance; in maturity, large trunk with crown composed of several large horizontal and ascending branches
- disease and insects - two very serious - White Pine Blister Rust and the White Pine weevil
- culture - easily transplanted; best grown in moist, well-drained, fertile soils; however, found in extreme locations - including dry rocky ridges and sphagnum bogs; extremely intolerant of air pollutants and salts; will develop chlorosis in high pH soils
- notes - a very handsome and ornamental specimen; valuable for parks, estates and large properties; also makes a beautiful sheared hedge; a well- grown, mature white pine is without equal among the firs and other pines according to Micheal Dirr

Picea glauca (White Spruce)

- hardiness - zone 2 to 6
- size - 40 to 60 feet high; 10 to 20 wide
- rate - medium
- native habitat - Labrador to Alaska, south to Montana, Wyoming, Arkansas, Minnesota and New York
- habit - broad, dense pyramid in youth, becoming tall, fairly narrow, compact and regular with horizontal spreading branches
- disease and insects - no serious insect or disease problems; susceptible to trunk and root rot, spruce bagworm, European sawfly and red spiders
- culture - transplants readily; found on many different sites, typical of stream banks, lake shores and adjacent sites; most tolerant of spruces - withstands heat, cold, drought and crowding
- notes - useful as specimen, hedge or windbreak; adaptable; somewhat intolerant of urban stresses such as air pollutants and salt spray

Platanus occidentalis (Sycamore, Buttonwood or American Planetree)

- hardiness - zone 4 to 9
- size - 75 to 100 feet high and wide
- rate - medium to fast; about 1 foot per year over 10 years
- native habitat - Maine to Ontario and Minnesota, south to Florida and Texas into northeastern Mexico
- habit - large/ massive trunk with wide spreading open crown of massive crooked irregular branches; striking and impressive, especially in winter when the white mottled bark is most pronounced
- disease and insects - anthracnose, leafspots, aphids, Sycamore plant bugs, bagworms, borers, among others
- culture - similar to *P. x acerifolia* (easily transplanted; attains greatest size in deep, moist, rich soils but will grow in just about any conditions including areas with high pH and pollutants) but a bit less tolerant of adverse conditions; prune in winter; typically found in native bottomlands and along banks of rivers
- notes - in native situations, especially along waterways it is an impressive sight in the landscape; does drop quite a bit of detritus - i.e. twigs, big leaves, fruits; might be better to use the non- native species - *P. x acerifolia* - due to its better tolerance to adversity

Quercus alba (White Oak)

- hardiness - zone 3b to 9
- size - 50 to 80 feet high; 50 to 80 feet wide
- rate - slow to medium; 12 to 15 feet over 10 to 12 years
- native habitat - Maine to Florida, west to Minnesota and Texas
- habit - pyramidal when young; upright- rounded to broad-rounded with wide spreading branches at maturity
- diseases and insects - anthracnose, bacterial leaf scorch, basal canker, canker, leaf blister, leaf spots, powdery mildew, etc. and gypsy moth, pin oak sawfly, leaf miner, among others; is a very durable, long-lived tree despite the long list of pests
- culture - transplant B&B as a small tree; found on many types of soil although performs best in deep, moist, well-drained soil; prune in winter to early spring; with compaction and removal of organic matter this tree will gradually decline
- notes - this species probably won't become a valuable landscape tree - production is difficult, growth is slow, and transplanting can be problematic; a majestic and worthy tree for large areas and one of the most handsome of oaks
- related species - *Quercus bicolor* (Swamp White Oak) - excellent drought resistance but needs acid soil; generally easier to transplant than *Q. alba*

Quercus macrocarpa (Bur Oak)

- hardiness - zone 3 to 8
- size - 70 to 80 feet high and wide
- rate - slow; 15 to 20 feet of growth over a 20-year period
- native habitat - Nova Scotia to Pennsylvania, west to Manitoba and Texas
- habit - weakly pyramidal in youth gradually developing massive trunk and broad crown with stout branches; open growth
- diseases and insects - anthracnose, bacterial leaf scorch, basal canker, canker, leaf blister, leaf spots, powdery mildew, gypsy moths, yellow-necked caterpillar, pin oak sawfly, among others; notwithstanding the aforementioned, bur oak is generally considered to be a low-maintenance, long-lived tree
- culture - difficult to transplant; very adaptable to various soils; limestone soils are favored; succeeds well even in dry, clay soils; more tolerant of city conditions than most oaks
- notes - too large for average home landscape, however makes an excellent park or large area tree

Quercus palustris (Pin Oak)

- hardiness - zone 4 to 8
- size - 60 to 70 feet high; 25 to 40 feet wide
- rate - one of the faster growing oaks; 12 to 15 feet over 5 to 7 years
- native habitat - Massachusetts to Delaware, west to Wisconsin and Arkansas
- habit - strongly pyramidal with strong central leader; lower branches pendulous; in old age assumes an oval-pyramidal form and loses many of its lower branches
- diseases and insects - galls often a problem; iron chlorosis can be a problem but can be corrected; best to avoid when pH is too high
- culture - readily transplantable because of fibrous root system; will tolerate wet soil and some standing water; intolerant of high pH; somewhat tolerant of city conditions
- notes - most widely used native oak for landscaping, although, there are many other superior oaks

Quercus prinus (Chestnut Oak)

- hardiness - zone 4 to 8
- size - 60 to 70 feet high and wide; somewhat irregular spread
- rate - slow to medium; 12 to 15 feet over 7 to 10-year period
- native habitat - southern Maine and Ontario to South Carolina and Alabama
- habit - pyramidal, oval to rounded in youth, eventually rounded and relatively dense
- diseases and insects - no pests or diseases of major concern other than gypsy moth caterpillar
- culture - relatively easy to transplant; found on poor, dry, upland sites; maximum growth found on well drained sites
- notes - a lovely tree that does exceedingly well in dry, rocky soil; a better landscape tree than ever considered; observed in parking lot islands that have prospered

Quercus rubra (Red Oak or Northern Red Oak)

- hardiness - zone 3b to 7 (8)
- size - 60 to 75 feet high; 60 to 75 feet wide
- rate - fast; 2 feet per year over a 10-year period
- native habitat - Nova Scotia to Pennsylvania, west to Minnesota and Iowa
- habit - rounded in youth, becoming round-topped and symmetrical with age
- diseases and insects - basically free of problems, although some of the pests that bother White Oak can sometimes be a problem; susceptible to oak wilt which is a systemic fungal disease that has no cure
- culture - transplants easily due to negligible tap root; prefers well-drained sandy and acid soils; withstands urban pollution; good performer; will develop chlorosis in high pH; grows on coast so is suspected to have some salt tolerance
- notes - great tree for use in commercial areas - common street and urban tree

Sassafras albidum (Common Sassafras)

- hardiness - zone 4 to 9
- size - 30 to 60 feet high; 25 to 40 feet wide
- rate - medium to fast; 10 to 12 feet over 5 to 8 years
- native habitat - Maine to Ontario and Michigan, south to Florida and Texas
- habit - pyramidal, irregular tree in youth with many short, stout, contorted branches which spread to form a flat-topped irregular, round-oblong head at maturity; often sprouts from roots forming thickets
- diseases and insects - no serious insect or disease problems; cankers, leaf spots, mildew, wilt, root rot, Japanese beetles, Promethea moth, among others; remarkably free of problems except of occasional iron chlorosis
- culture - transplant from small container (tap rooted) or B&B in early spring into moist, well-drained, acid soil; found in acid, rocky soil in the wild; gives way to other species over time; can form dense thickets;
- notes - excellent for naturalized plantings, roadsides, and home landscaping

Ulmus americana (American Elm)

- hardiness - zone 3 to 9
- size - 60 to 80 feet high; 40 to 50 feet wide
- rate - medium to fast; 10 to 12 feet over 5 years
- native habitat - Newfoundland to Florida west to the Rockies
- habit - vase shaped form with trunk dividing into several erect limbs strongly arched
- above
- diseases and insects - subject to many pests which are devastating where control measures are not effective or available; Dutch elm disease, elm yellows, elm phloem necrosis, elm bark beetle, elm leaf beetles, elm leaf miner, verticillium wilt, wetwood, cankers, leaf curl, leaf spot, powdery mildew, aphids, elm leaf beetle; many studies evaluating Dutch elm disease resistance in selected clones - 'Valley Forge', 'New Harmony' and 'Princeton' showed relatively high resistance
- culture - easily transplanted because of shallow, fibrous root system; prefers rich, moist soils but will grow well under a variety of conditions; often grow in wet flats where standing water accumulates in spring and fall; prune in fall; pH tolerant; shows good soil salt tolerance
- notes - at one time used extensively as a street tree but many of those trees have succumbed to Dutch elm disease; the extensive use of one type of tree such as the American Elm is an example of bad landscaping practices - eventually disease caught up due to over planting- the use of a diversified tree planting program encompassing many different genus, species and cultivars is recommended; the more resistant clones - 'Valley Forge', 'New Harmony' and 'Princeton' have data to support their use; the 'American Liberty' or 'Liberty' series is not as resistant and their use should be tempered

Non-Native Selections

Acer campestre (Hedge Maple or Field Maple)

- hardiness - zone (4)5 to 8
- size - 25 to 45 feet high and wide
- rate - slow; 10 to 14 feet over 10 to 15 years
- native habitat - widespread in Europe, Near East and Africa
- habit - usually rounded and dense; often branched to the ground but can be easily limbed up; some display pyramidal-oval outline
- diseases and insects - none serious
- culture - readily transplanted and extremely adaptable; performs admirably well in range of pH; tolerant of dry soils and compaction; withstands severe pruning; air pollution tolerant
- notes - excellent lawn specimen and street tree; good under utility lines due to small stature; can be pruned as hedges; best maple for dry alkaline soils; can be a variable species - for example in leaf shape

Acer tataricum (Tatarian Maple)

- hardiness - zone 3 to 8
- size - 15 to 20 feet high and wide
- rate - slow to medium
- native habitat - Southeast Europe, western Asia
- habit - a large multi-stemmed shrub of bushy habit or small rounded to wide spreading tree
- diseases and insects - none particularly serious
- culture - transplant B&B; tolerant of adverse conditions including drought; similar to A. ginnala; may prove more alkaline tolerant than A. ginnala
- notes - handsome small specimen tree, street tree, groupings and possibly planter boxes

Carpinus betulus (Common Hornbeam)

- hardiness - zone (4) 5 to 7
- size - 40 to 60 feet high; 30 to 40 feet wide
- rate - slow to medium; about 10 feet over 10 years
- native habitat - Europe, Asia Minor, southeast of England
- habit - pyramidal to rounded in youth, oval- rounded to rounded at maturity
- diseases and insects - none serious
- culture - transplant as B&B or container in spring; tolerant of a wide range of soil conditions but prefers well-drained situations; pH tolerant; pruning seldom required although withstands heavy pruning; best pruned during the period of late summer to mid-winter to avoid significant bleeding; partially tolerant of difficult situations
- notes - one of the finest landscape trees; withstands pruning better than European beech; can be used for screens, hedges, groupings, around large buildings, in malls and planter boxes; many excellent cultivars are preferable to the species

Castanea mollissima (Chinese Chestnut)

- hardiness - zone 4 to 8
- size - 40 to 60 feet high and wide
- rate - slow to medium; 4 to 7 feet over 3 to 4 year period
- native habitat - Northern China, Korea
- habit - rounded in youth developing to broad-rounded at maturity; usually low-branched
- diseases and insects - resistant, but not immune, to chestnut blight (*Endothia parasitica*), susceptible to leaf spot, anthracnose and twig and stem cankers; Weevils can be a problem in some areas
- culture - easily transplanted when young; does well in hot, dry climates; tough and durable tree
- notes - best replacement for American chestnut; good street tree as long as messy fruit is accounted for; Flowers can be quite showy, albeit for a brief period

Cornus kousa (Kousa Dogwood)

- hardiness - zone 5 to 8
- size - 20 to 30 feet high and wide
- rate - slow to medium
- native habitat - Japan, Korea, China
- habit - vase-shaped in youth; forms rounded appearance with distinct stratified branching with age; older specimens show strong horizontal lines
- diseases and insects - none serious; some borer damage reported
- culture - transplant and container grown or B&B; fastidious for acid, well-drained soil; somewhat drought resistant
- notes - handsome small specimen tree or shrub; difficult to over use this plant; magnificent flowering in May-June; good fall color

Cornus mas (Cornelian Cherry Dogwood)

- hardiness - zone 4 to 7 (8)
- size - 20 to 25 feet high; 15 to 20 feet wide
- rate - medium
- native habitat - central and southern Europe and western Asia
- habit - large multi-stemmed shrub or small tree with oval-rounded outline; usually branching to the ground - it is possible to remove lower branches to create a tree like structure; may sucker profusely
- disease and insects - none serious; potential disease problems include dogwood anthracnose, leaf spot, crown canker, root rot, powdery mildew and leaf and twig blight
- culture - adaptable to a range of soil types and pH; prefers rich, well-drained soil; sun to part shade; most durable of larger dogwood
- notes - one of the first shrubs to flower in spring; very effective in early spring landscape; best as a hedge, screen or foundation plant or as a specimen or grouping in the shrub border or trained as a small tree

Ginkgo biloba (Maidenhair Tree)

- hardiness - zone 4 to 8
- size - 50 to 80 feet high; 30 to 40 feet wide
- rate - slow to medium; 10 to 15 feet over 10 to 12 years
- native habitat - Eastern China
- habit - pyramidal in outline when young; becomes wide-spreading with large, massive picturesque branches; tremendous variation in plants grown from seed; gets better with age - be patient
- diseases and insects - extremely free from pests
- culture - transplants easily and establishes without difficulty; prefers, sandy, deep moist soils but grows in almost any situation; very pH adaptable; prune in spring; durable tree for difficult landscape situations; good salt and heat tolerance
- notes - excellent city tree for public areas; can sometimes look out of place because of unique foliage and winter habit; somewhat gaunt and open in youth but with time becomes one of the most spectacular of all trees; one of the oldest trees - growing on earth for 150 million years; should be leery of planting unnamed clones so as to not end up with fruiting female; nurseries typically sell only male trees (fruitless), because female trees produce seeds encased in fleshy, fruit-like coverings which, at maturity in autumn, are messy and emit a noxious, foul odor upon falling to the ground and splitting open

Maackia amurensis (Amur Maackia)

- hardiness - zone 4 to 7
- size - 20 to 30 feet high and wide
- rate - slow; 12 feet over 20 years
- native habitat - Manchuria
- habit - small round-headed tree; branches upright- arching-spreading
- disease and insects - nothing serious
- culture - easily transplanted; quite adaptable, although prefers loose, well-drained soil; acid or alkaline soil; fixes atmospheric nitrogen
- notes - of interest for late summer flowers; quite vigorous with clean foliage; very durable and adaptable; attractive bronze colored bark; good candidate for street use or container planting; closely related to Cladrastis; excellent fall color

Magnolia x soulangiana (Saucer Magnolia)

- hardiness zone 4 to 9
- size - 20 to 30 feet high; variable width but often similar to height
- rate - medium; 10 to 15 feet over 10 years
- native habitat - cultivated
- habit - distinctly upright in youth and often grown as a multi-stemmed shrub in nurseries; large spreading shrub or small tree
- diseases and insects - no serious insect or disease problems; leaf spot and canker, scale; late spring frosts may damage flowers
- culture - best grown in moist, acidic, organically rich, well-drained loam; generally intolerant of soil extremes (dry or wet); site in locations protected from strong winds; likes consistent and regular moisture throughout the year; best sited in a protected location because early spring frosts can damage flowers
- notes - specimen flowering shrub or small tree for the landscape; choosing later blooming varieties can prevent frost damage on spring bloom

Parrotia persica (Persian Parrotia or Persian Ironwood)

- hardiness - zone (4)5 to 8
- size - 20 to 40 feet high; 15 to 30 feet wide; although some exceed height with width
- rate - medium; 10 feet over 6 to 8 years; can be twice that with adequate moisture and fertilization
- native habitat - Iran
- habit -small, single-stemmed tree or large multi-stemmed shrub with an oval-rounded head of upright ascending branches; there is also a form with wide-spreading branches
- diseases and insects - very pest free; possibly Japanese beetles
- culture - transplant from B&B or container; will tolerate chalky soils; best in well-drained, loamy slightly acid soil; prune in spring; extremely tolerant once established; an unsung plant for stress tolerance; withstands drought, heat, wind, cold; consistently beautiful;
- Dirr, "one of the best small specimen trees I know"; foliage, bark and pest resistance make it worth growing; excellent street tree; great in foundation plantings; fine accent plant; many fine specimens at a number of institutions and arboretums; outstanding ornamental that has few rivals

Picea abies (Norway Spruce)

- hardiness - zone 3b to 7(8)
- size - 40 to 60 feet high; 25 to 30 feet wide
- rate - medium to fast, especially in youth
- native habitat - Northern and Central Europe
- habit - pyramidal with sedulous branching
- diseases and insects - none serious - red spider, spruce gall aphid, budworm and borers
- culture - transplant B&B, even large sizes; moves readily because of shallow, spreading root system; best in moderately moist, sandy, acid, well-drained soils but can be planted in average soils if given adequate moisture when young
- notes - grows particularly well in harsher climates but may have been over planted by landscapers; effective screen or windbreak in cold northern climates

Platanus x acerifloia (London Planetree)

- hardiness - zone (4) 5 to 8 (9)
- size - 70 to 100 feet high; 65 to 80 feet wide
- rate - medium; 35 feet over 20-year period
- native habitat - cultivated variety - hybrid cross between American sycamore (*P. occidentalis*) and Oriental planetree (*P. orientalis*)
- habit - pyramidal in youth, developing a large, open, wide spreading crown with age; massive branches
- disease and insects - cankerstain (very serious), anthracnose, *Xyella fastidiosa*, powdery mildew, American plum borer, Sycamore lace bug, among others; due to over planting diseases have caught up to this tree and it's use should be tempered; some reportedly resistant cultivars, such as 'Columbia' and 'Liberty', are available; originally thought to be much more resistant to sycamore anthracnose than its American parent, however this is no longer entirely clear since anthracnose resistance seems to vary considerably among various hybrid plants
- culture - easily transplanted; prefers deep, rich, well-drained soils but is tolerant to just about any conditions; withstands high pH and pollutants; withstands urban pollutants; prune in winter
- notes - acceptable for a wide variety of settings; should avoid monoculture plantings; influx of disease should be monitored

Sophora japonica (Japanese Pagoda Tree or Scholar-tree)

- hardiness - zone 4 to 7
- size - 50 to 70 feet high; 50 to 70 feet wide (with great variation)
- growth rate - medium to fast; 10 to 12 feet in 5 to 6 year period
- native habitat - China, Korea
- habit - upright-spreading with broadly rounded crown; casts relatively light shade
- diseases and insects - no serious insect or disease problems; canker, twig blight, powdery mildew and leaf hoppers
- culture - transplant B&B as young specimen; prefers well drained, loam soils; can be tender to cold when young; withstands heat and drought once established; tolerant of pollution; can be a bit “floppy” in its growth habit and can be difficult to train into a central leader; prune in fall
- notes - good tree for city conditions, lawns, parks and poor soil areas; may be best in zone 5; excellent flower and foliage; can be considered messy; consistently rated among the highest for pollution and urban tolerance

Sorbus alnifolia (Korean Mountainash)

- hardiness - zone 4 to 7
- size - 40 to 50 feet high; 20 to 30 feet wide
- rate - medium to fast; 10 to 12 feet over 5 to 7 years
- native habitat - Central China to Korea and Japan
- habit - pyramidal when young developing a weakly pyramidal-oval to almost rounded outline at maturity; sometimes broad and rounded
- diseases and insects - the least susceptible to borer injury, fireblight; considered to be one of the best of the mountain ashes because of its pest resistance and form
- culture - transplant B&B into any well-drained soil; very pH adaptable; doesn't withstand polluted conditions; prune in winter and early spring; one of the most successful of flowering trees at Arnold Arboretum, requiring little cultural attention
- notes - specimen tree for lawns; not for streets or downtown areas; the best of the mountain ashes; probably best not to use in high stress environments; always threat of fire blight and borer damage

Tilia cordata (Littleleaf Linden)

- hardiness - zone 3b to 7
- size - 60 to 70 feet high; 30 to 45 feet wide
- rate - medium; 10 to 15 feet over 5 to 10-year period
- native habitat - Europe; planted since ancient times
- habit - pyramidal in youth; upright- oval to pyramidal rounded and densely branched in old age
- diseases and insects - aphids and Japanese beetles
- culture - readily transplantable; pH adaptable; found on limestone in wild; pollution tolerant; one of the best city and street trees
- notes - excellent shade tree for large areas, streets, malls - just about any place; can be pruned effectively into hedges
- related species - *Tilia x euchlora* (Crimean Linden) - Dirr, "a rather handsome tree and in my opinion superior to *T. cordata*"; tolerant of pollution and hot, dry conditions; many of these trees are grafted and basal suckering can become a problem

Tilia tomentosa (Silver Linden)

- hardiness - zone 4 to 7
- size - 50 to 70 feet high; 25 to 55 feet wide
- rate - medium; similar to *T. cordata*
- native habitat - Southeastern Europe; western Asia
- habit - pyramidal when young; upright-oval to pyramidal-oval with age
- diseases and insects - similar to *T. cordata*; less prone to insects
- culture - same as *T. cordata*
- notes - good street tree as it tolerates heat and drought better than other lindens; resistant to Gypsy moth and Japanese beetle; one of Dirr's favorite shade trees

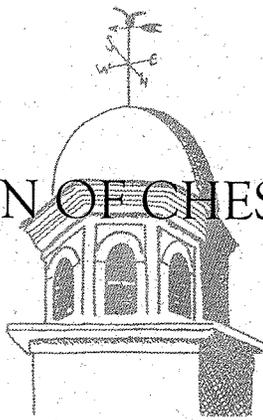
Ulmus parviflora (Chinese Elm)

- hardiness (4) 5 to 9
- size - 40 to 50 feet high and wide
- rate - medium to fast; can grow 1.5 feet per year over a ten-year period
- native habitat - Northern and central China, Korea, Japan
- habit - graceful round headed tree with pendulous branchlets; much like the American Elm but much variation in habit with no two seedlings alike
- diseases and insects - shows considerable resistance to Dutch elm disease, as well as the elm leaf and Japanese beetle
- culture - easily transplanted; adaptable to extremes in soil pH and soil; excellent urban tolerance
- notes - excellent, durable, tough tree for any situation; may provide some of our most beautiful shade trees in years ahead due to large gene pool

Zelkova serrata (Japanese Zelkova)

- hardiness - zone (4) 5 to 8
- size - 50 to 80 feet high; 30 to 70 feet wide
- rate - medium; 10 to 12 feet over 4 to 6-year period; may be faster in youth
- native habitat - Japan, Korea, Taiwan, Manchuria
- habit - low-branched and vase shaped in youth; maintaining a similar form with ascending branches in old age
- diseases and insects - susceptible to similar problems as Elms, however resistant to Dutch Elm Disease; good resistance to elm leaf beetle and Japanese beetle
- culture - transplant readily from B&B; prefers moist, deep soil; pH adaptable; very wind and drought tolerant once established; young trees can be susceptible to frost; prune in fall; good pollution tolerance
- notes - very handsome tree because of foliage, interesting growth habit and bark; some have used it as a replacement to American Elm; makes high quality timber that is beautifully grained and is extremely durable and strong

TOWN OF CHESTER



556 Elm Street
P.O. Box 370
Chester, VT 05143

(802) 875-2173
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January 18, 2018

To: Chester Residents
Re: Chester Village Canopy Management Plan

Dear Chester Resident:

The Town of Chester has been awarded a grant to help create a Canopy Management Plan for our village area. While the Village Center Master Plan was being developed, it became apparent that the residents of Chester, as well as our visitors, value the trees that borders our main streets. In an effort to maintain our existing canopy, as well as to ensure that we continue to have this asset in the future, efforts are being made to develop a Canopy Management Plan. The planning is being performed through the work of a local Landscape Architect, Scott Wunderle of Terrigenous, as well as a handful of volunteers and office staff.

We want to be clear that this is a long-term plan which is expected to take many years to implement. It is a living document that never ends. You can expect that the first year or two will consist mostly of clean up – removing dead trees and limbs. This will also include pruning many trees to give them a chance to continue growing. There may be some plantings during these first few years, but planting will not be the primary focus to begin with.

As part of this process, the town is reaching out to you and others whose property is located in this locale. I have enclosed a copy of the plan that shows your property in relation to the area under review. Please understand that while this plan might show changes to your property, this program is entirely voluntary. The town, in no way, intends to remove or plant any trees on private property without consent of the homeowners. We are however, encouraging those people, such as yourself that are located within the boundaries of the plan, to consider the selected plantings and plans when making changes or improvements to the canopy on your property.

In addition, the town is currently working on an incentive program that would provide monetary assistance toward tree acquisition should you choose to participate in this program. Further details of this idea will be forthcoming in the future as it develops. The town is also working on the creation of an Arbor Day Celebration to increase awareness of the value of Chester's trees. Please look for details on this event to be announced in the very near future.

Once you have reviewed the plan, please contact either Scott Wunderle or my office with any questions or comments that you might have. Your input would be a great benefit to the overall success of the plan and in protecting and maintaining our canopy.

Sincerely,


David Pisha
Town Manager

Chester Village Canopy Management Plan

Tree Watering Guide

Cited Sources:

“How Much Should You Water Your Tree?” L. Peter MacDonagh (July 11, 2016).

< <http://www.deeproot.com/blog/blog-entries/how-much-should-you-water-your-tree>>.

“Watering Newly Planted Trees and Shrubs” Kathy Zuzek (University of Minnesota Extension, 2016).

< <http://www.extension.umn.edu/garden/yard-garden/trees-shrubs/watering-new-trees-shrubs/>>.

“Soil and Water in the Life of a Street Tree” Samuel Geer (April 3, 2014). *Environment, Infrastructure*.

< <http://streets.mn/2014/04/03/soil-and-water-in-the-life-of-a-street-tree>>.

“Water Management Strategies for Urban Trees in an Uncertain Environment” Geoff Connellan.

< <http://www.treenet.org/resources/water-management-strategies-for-urban-trees-in-an-uncertain-environment-geoff-connellan>>.

“Tips from the Field: Top Ten DO’s and Don’t’s for Urban Tree Planting” Chris Swann (Center for Watershed Protection, 2017).

< <https://owl.cwp.org/mdocs-posts/tips-from-the-field-top-ten-dos-and-donts-of-urban-tree-planting/>>.

Additional Resources:

“Trees in the Urban Landscape: Site Assessment, Design, and Installation.” Peter J. Trowbridge, Nina L. Bassuk Wiley; 1 edition (February 9, 2004).

“Engaging Residents in Street Tree Stewardship: Results of a Tree Watering Outreach Intervention.” Christine Moskell, Nina Bassuk, Shorna Allred, and Pat MacRae from *Arboriculture & Urban Forestry* 42(5): September 2016.

<<https://www.hort.cornell.edu/uhi/research/articles/p301-317.pdf>>.

“How Much Should You Water Your Tree?”

L. Peter MacDonagh

No matter how drought tolerant, native, or local a tree species is, almost all young trees (typically 1 to 3 years old, or up to 5 years in Type I, Type II and especially arid regions) in man-made landscapes must be watered by people during the summer to survive and become established. The complete extent of young tree roots in the first few years after planting is limited to the soil volume that the tree was last grown in (for example, a pot or container). Mature, established trees generally require less consistent care, but during droughts every tree must be monitored and watered adjusted accordingly.

YEAR 1:

	Amount	Frequency
First month of planting	<i>Trunks smaller than 2”:</i> 1 gallon per inch of trunk diameter. <i>Trunks larger than 2”:</i> 2 gallons per inch of trunk diameter.	Water 3 times per week over the root ball
Second month of planting	“ “	Water twice per week over the root ball.
Third month of planting	“ “	Water once per week over the root ball.
Fourth month of planting	“ “	Water twice per month over the root ball.

YEAR 2:

	Amount	Frequency
Hottest months	“ “	Water twice per month over the root ball only. During a drought, water once weekly.
Cooler months	“ “	Monitor and respond

YEAR 3-5:

	Amount	Frequency
Hottest months	“ “	Water twice per month, twice the width of the root ball. During a drought, water once weekly.
Cooler months	“ “	Monitor and respond

For young trees, water the roots around the trunk. I also recommend creating and maintaining a 3-foot wide, 1 – 3” deep, organic (wood chip) mulch ring around the trunk for its entire life, to help maintain soil moisture. For mature trees (older than 25 years), or those with a trunk more than 12” in diameter, water deep and occasionally.

Watering Tools:

There are a great number of available tools for watering trees depending on your needs, budget, and other site considerations. Here are some examples of passive and active watering methods:

- Slow release watering bags (e.g. Gator bags)
- Rain leaders (or scuppers) can be directed towards tree trunks or below ground into the tree soil mass.
- Flexible downspout extender can be directed towards tree trunks
- Rain barrels with flexible hoses attached
- Automatic irrigation can be great for watering hard-to-get trees and can be set to run occasionally for long periods of time using drip, bubbler, or soaker hose

It’s important, particularly with mature, established trees, to water the entirety of the soil volume, even the part under paving. If there is no automatic tree watering system (bubblers, drip), I suggest using a soil watering needle with a watering hose connected. Effective tree watering always takes place relatively slowly. (For this reason, pop-up rotary sprinkler head systems for lawns, that only turn on for a few minutes a few to several times a week, are not the best type of watering for trees). If you use automatic irrigation to water your trees, set them to run for much longer periods of time using drip, bubbler, or soaker hose.

Still Not Sure?

The above are just guidelines; you should use your own experience, common sense, and (if appropriate) input from a professional when applying these to your site. Some simple questions can help you assess how much and how frequently to water your trees. Think about the following as a place to get started:

- Are the trees young and newly planted, or mature and established?
- How much precipitation does the area receive? How intense and frequent are the storms?

- How warm is the average daily/high temperature in the hot season?
- How much soil are the trees planted in?
- What type of soil are the trees planted in?
- Are the trees growing in a street, median, parking lot, lawn?
- What moisture conditions does the tree prefer?
- How does water get into the tree opening?

If you're wondering what trees do with all that water, on hot or windy days in the summer, a whopping 95 percent of the water that the tree consumes, when available, is turned into mist by the leaves (a process called evapotranspiration). The remaining 5 percent is used to photosynthesize to manufacture sugars for food.

“Watering Newly Planted Trees or Shrubs”

Kathy Zuzek

Newly planted trees and shrubs need regular and consistent watering until root systems establish. Root systems of bare root, containerized, and balled and burlapped trees and shrubs have been severely reduced or restricted by nursery management practices. After planting, root systems will grow and establish until they are much wider than the above ground portion of the plant. During this establishment time, newly planted trees and shrubs need consistent watering to prevent water stress.

Table 1. Watering schedule for newly planted trees and shrubs	
Weeks after planting:	Watering frequency:
1-2	Daily
3-12	Every 2-3 days
Until established*	Weekly

How long does it take for tree and shrub roots to establish?

Newly planted shrubs are considered established when their root spread equals the spread of the above-ground canopy. In Minnesota, this will take 1-2 years. Establishment times for trees increases with tree size. Trunk caliper at planting time can be used to determine the time it takes for roots to establish (Table 2).

Table 2. Establishment Time and Watering Volume for Newly Planted Trees		
Caliper (inches):	Root Establishment Time (years)	Water Applied during each Irrigation (gallons)
1	1.5	1 - 1.5
2	3	2 - 3
3	4.5	3 - 4.5
4	6	4 - 6
5	7.5	5 - 7.5
6	9	6 - 9

Where to Water:

Apply water directly over the root ball. Also, be sure to keep the backfill soil in the planting hole moist—this encourages the roots to expand beyond the root ball into the backfill soil. Tree roots grow approximately 18 inches per year in Minnesota so remember to expand the area being watered over time. Initial watering of a newly planted tree or shrub is easily accomplished by creating a circular mound of earth 3 to 4 inches high around the plant at the edge of the root ball to create a reservoir for irrigation water. A slow trickle of water can be used to fill this reservoir, which allows water to slowly infiltrate into and around the root ball. Tregator® bags can also be used to provide a slow delivery of water over the root balls of establishing trees and shrubs.

How Much Water to Apply:

- When watering newly planted trees, apply 1-1 ½ gallons per inch of stem caliper at each watering (See Table 1).
- When watering newly planted shrubs, apply a volume of water that is ¼ - 1/3 of the volume of the container that the shrub was purchased in. As roots grow and spread, irrigation volume will need to be increased.

Mulching Trees Maximizes Water Uptake:

When trees and shrubs are planted into turf, competition for nutrients, water, and space occurs below ground between turf roots and woody plant roots. Turf wins because its dense fibrous root system prevents woody plants from producing water and nutrient-absorbing roots in the top few inches of soil. As a result, woody plant establishment and growth is slower in turf areas than in mulched or bare soil areas.

To optimize root production, water uptake, and establishment of newly planted trees and shrubs:

- Eliminate turf and weeds from the base of the plant out to several feet beyond the plant canopy
- Leave the top of the root ball bare and start the mulch application at the outer edge of the root ball.
- Apply a three-inch layer of organic mulch around newly planted trees and shrubs in a circle that extends several feet beyond the tree or shrub canopy.

Mulching around newly planted trees and shrubs with organic materials (wood chips, pine needles, etc.) has several advantages over bare soil cultivation:

- Decreases water evaporation from soil.
- Serves as a sponge that prevents runoff around plants growing in heavy clay soils or on sloped sites.
- Helps to control seed germination and growth of weeds.
- Insulates soil and buffers extreme summer and winter soil temperatures.
- Reduces soil compaction from mowing equipment

- Prevents damage to stems and trunks by lawn mowers and weed cutters.
- Improves soil health (increases microbial activity, nutrient and water-holding capacity, soil pore spaces, and air penetration) as it decomposes.

Deep mulch applications can be problematic because they may:

- prevent movement of rain or irrigation water into the root ball of newly planted trees and shrubs. This can result in root desiccation and plant stress.
- lead to root production and growth in the mulch. This often results in circling and stem-girdling roots.
- reduce oxygen levels around roots and cause root suffocation.
- keep poorly drained soils too wet, which favors root rot development.
- keep bark excessively wet when piled around trunks and stems. This may lead to bark decay.
- create habitat for rodents that chew bark and girdle trunks and stems.

Additional Guidelines and Information

“Soil and Water in the Life of a Street Tree”

Samuel Geer

Relevant Concepts:

“Another factor in the short shelf life of trees is the challenging establishment period, when trees are most vulnerable to drought and disturbance. This is particularly true for trees that are planted in highly disturbed urban sites, where compacted soil acts as a barrier to growth and limits access to water and oxygen, immediately stunting the tree and leading to decline and death.”

“In response to these challenges, urban foresters are developing new techniques that improve tree longevity and are enhancing the value of trees as a component of complete streets. Many of these systems are designed to make more efficient use of underground soil volumes. The most well-known systems are the suspended pavement or structural soil systems. Paved surfaces require a certain level of soil compaction to remain stable, while root systems require looser soils that can cycle water, oxygen, and nutrients. In addition to engineered systems for new tree plantings, there are also retrofit techniques that can enhance the growth of existing trees. These systems allow healthy root structures to thrive underneath streets and sidewalks.”

“Structural soils describe a variety of compactable aggregate/soil mixes that maintain significant void space while remaining stable enough to support pavement. The technique originated in Europe as a way to improve tree survival rates in dense urban areas. When paired with cobblestones or permeable pavements, water can percolate directly to the root zone.”

“Another area of relentless progress is the breeding and cultivation of new tree specimens that are adapted to thrive in tough urban conditions. At the core of this effort is the need to stay ahead of climate change. If the climate of Minnesota is going to become comparable to that of Kansas by 2050, then there is the need to plant trees that are tough as nails and can handle drought. The Urban Forestry Outreach and Research Nursery at the UMN is dedicated to introducing new tree varieties into wider circulation and improving arboriculture practices. They have an excellent website filled with cutting edge research and practical guidance that is worth checking out.”

“Water Management Strategies for Urban Trees in an Uncertain Environment”

treenet.org

Relevant Concepts:

“The vulnerability and dependence of urban landscapes on supplementary watering has become evident in recent years. Major changes have occurred both in the condition and health of urban landscapes and the approach to the management of these landscapes. A measured approach to the management of urban landscapes is required. Many urban trees are experiencing significant stress as a result of low soil moisture. The degree of stress is dependent upon the deficiency between the water that is available in the soil and the demand imposed by the tree. Both sides of the equation are highly variable. Drought, water restrictions and climate change all influence water availability. Species, stage of development and local climate all directly influence water demand. The truly sustainable urban tree is able to grow to maturity without the need for supplementary watering. Unfortunately, due to the nature of species commonly used, the climate of the locality in which they are grown and the demanding circumstances in which they are required to perform means that many trees are stressed and do require supplementary water.”

“TREES AT RISK DUE TO LOW SOIL MOISTURE: Identifying trees at risk from water stress is an important part of a water management strategy. There are a number of factors, in addition to low rainfall, that can contribute to an urban tree experiencing soil moisture stress.”

“LIMITED SOIL VOLUME: Trees grown in containers will generally require supplementary water due to the very limited water storage capacity. They may only have two to three days of storage during peak demand periods. In many streetscape situations, trees are effectively growing in very restricted soil volumes. These can be considered to be “containerized” trees. Tree pits are often too small and do not allow the root system to develop to a point where it can support a mature tree. While there is significant literature on soil specification and planting pit preparation for tree establishment and health (Craul, 1999), many trees are still planted into excessively restrictive spaces.”

“INEFFECTIVE RAINFALL: Trees, particularly large ones, use large amounts of water. The replenishment of the supply from natural sources (e.g. rainfall) needs to be effective and timely. The maintenance of trees in street situations presents particular water challenges. Hard surfaces often result in runoff to the road or gutter. Overhanging structures along the street and sidewalk often act as rainfall interceptors. Also, the tree canopy intercepts rainfall and prevents rain entering the limited permeable area around the tree trunk.

Some strategies that should be considered include:

- Install permeable surface around trees in hard landscaped sites
- Ensuring soil around tree trunks allows infiltration
- Encourage runoff to be directed to tree water intake area Hostile soil conditions

The role of the soil is critical to a healthy tree. Both air and water, as well as nutrients, need to be readily available to the root system. Soil compaction, which can occur around many urban trees, impacts negatively in terms of water performance. Reduced infiltration rates means less water entering the soil profile and compacted soil means less space to store water. Strategies to prevent or minimize compaction include exclusion barriers and addition of mulch.”

“TREE WATER REQUIREMENTS: The water management of urban landscapes requires an understanding of the water use characteristics of all vegetation including trees. In order to establish and successfully manage a tree, it is important to have an appreciation of both the peak daily demand and the total amount of water required by the tree. In managing stressed trees in challenging environments, it is the amount of water required to keep the tree alive that is the critical consideration. The rate at which trees use water depends on the water use characteristics of the plant, the stage of development of the tree and the prevailing environmental conditions. When considering the water use rate for a particular species, it is the changing climatic conditions that will have greatest influence on the water use rates. Extreme climate conditions of high ambient air temperature, low relative humidity, and high wind speed and high levels of solar radiation are all associated with high water consumption by trees.”

“The factors influencing tree water use can be summarized as follows:

- Water use characteristic of the tree species (High, Medium, Low)
- Size of tree – crown area is the key dimension
- Density and area of leaves – as reflected by the Leaf Area Index (LAI)
- Site climate – evaporative demand
- Condition or health of the tree
- Stage of development of the tree
- Availability of water to the tree – water stressed trees use less water than if water readily available”

“There are a number of techniques available to estimate the tree water use rate. The approach outlined here is based on the use of climate data and crop factor values. Evaporation data from the Bureau of Meteorology is used. A Crop Factor value for the tree is used in conjunction with an evaporation value to determine the water use rate. For established trees, values of Crop Factor are generally in the range of 0.3 to 0.8. A healthy tree will use and require a lot more water than a stressed tree. The amount required to keep the tree alive is difficult to determine. One approach is to assume a low Crop Factor value, for example in the range on 0.2 or even less, and then monitor the tree condition to assess response.”

“The total foliage area influences the total potential transpiration of the tree. The Leaf Area Index (LAI) can be used to estimate the total leaf area. LAI values are typically in the range of 2.0 to 5.0 for trees. There are various techniques employed to take LAI into account. The estimation of tree water use approach described here uses an all-encompassing Crop Factor (CF) value that takes into account the leaf density and other influencing factors such as the grass around the tree.

“The following outline some of the challenges that may be preset when considering the watering of street trees, which tend to represent the more difficult cases:

- Tree roots contained within median and street structures – limited water storage volume and limited catchment opportunity
- Tree root distribution highly variable in density and position (including depth)
- Access to root systems often limited by impermeable or very low permeability surfaces
- Tree roots often in competition with turf roots for irrigation water
- Significant roots located deep within the soil profile – water needs to be delivered at depth
- Compacted soils (low infiltration rates) – particularly on nature strips
- Street trees are often in high traffic and high maintenance areas (risk to equipment functioning).”

“Tips from the Field: Top Ten DO’s and DON’T’s for Urban Tree Planting”

Chris Swan

DO’s:

1. Plan ahead prior to the planting date to ensure necessary permissions are obtained (e.g., Miss Utility, permits, property owner permission, community buy-in), trees and other materials are ordered and proper storage provided, the site is prepared, and volunteers are trained and ready, and develop a budget that includes all these items.
2. Develop a plan for tree maintenance that outlines the ‘who, what, when and where’ of maintenance (e.g., watering, mulching, removing stakes and tree shelters, invasive species control, inspections)
3. Consider potential site conflicts with tree planting (e.g., vandalism, lack of space for large mature trees, no water source) and pick a different site if there are major issues
4. Establish partnerships to assist with planting and maintenance and involve them from the very beginning (e.g., fire department to assist with watering, school groups and citizen groups to help out with maintenance)
5. Select species appropriate for the site’s climate, soils, exposure, and environmental conditions
6. Test and improve the site soils before planting if needed
7. Plan for invasive plant management – this may include weeding, mowing, mulching or other methods
8. Have experts on hand during planting day to provide training to volunteers on proper planting techniques
9. Water trees – use gator bags – should be watered at least once a week during the first growing season and during dry periods after that
10. Protect trees from mowers and weed whackers using mulch and weed whacker guards

DON’T’s:

1. Wait until the last minute to order trees from the nursery – allow plenty of lead time
2. Plant in the wrong season - Spring and Fall are best, depending on the type of stock you select

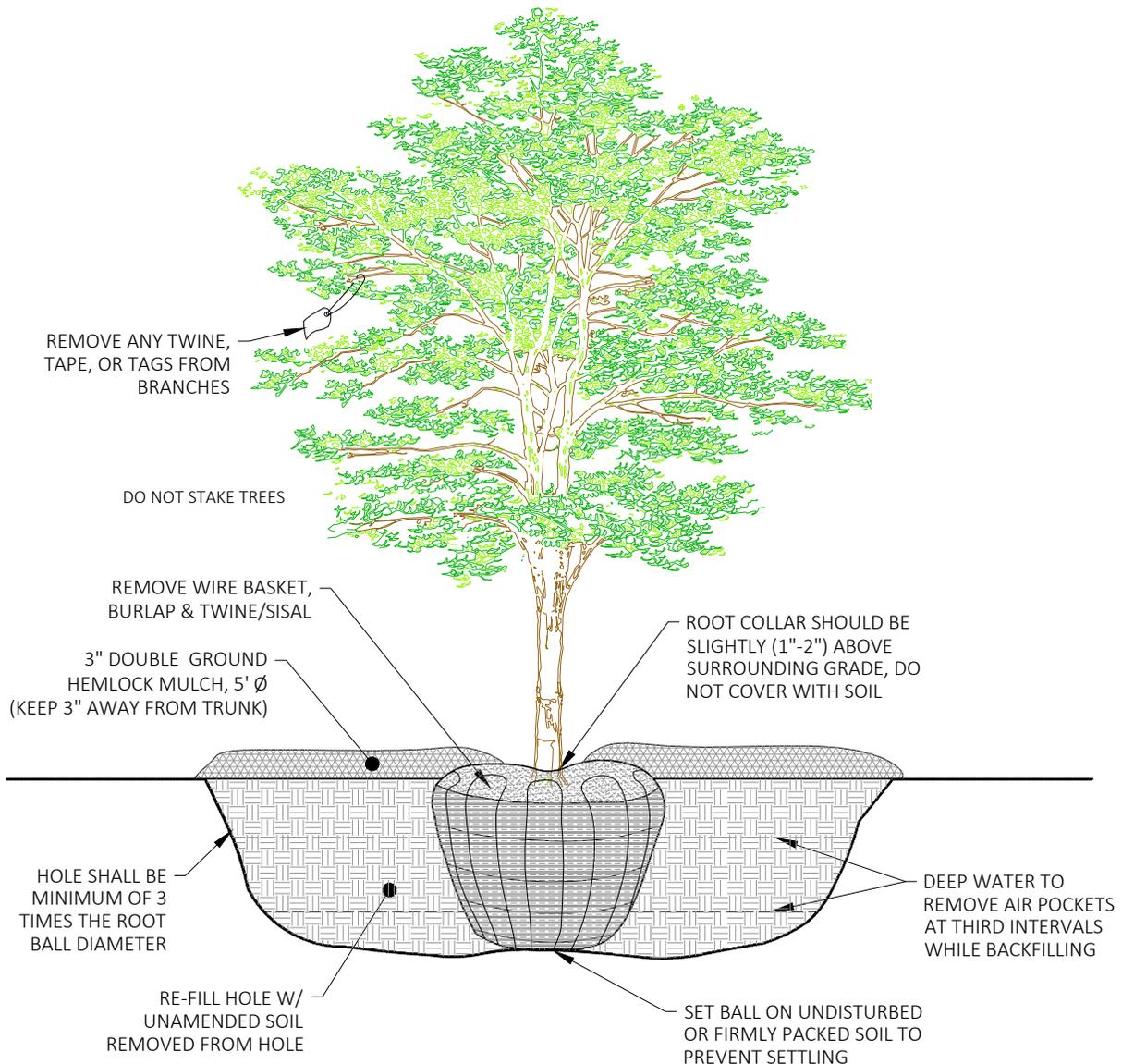
3. Plant all the same species – diversify so your entire planting project will not be wiped out in case of disease or insect infestation
4. Plant too far apart – choose a layout (e.g., no greater than 50 foot spacing) that will result in some canopy closure
5. Forget to call the local utility hotline (e.g., Miss Utility) or department responsible for locating utilities
6. Plant the tree too deep – the root collar of the tree should be exposed when planted
7. Leave the container, wiring, or string on the root ball when planting

8. Stake improperly or leave stakes on too long – if stakes are needed, use flexible ties that will not girdle the tree and remove after one year
9. Pile up mulch in a volcano around the tree trunk – a few inches of mulch is adequate and mulch should be kept away from the trunk to avoid rot and insect infestation.
10. Forget to water!

TREE PLANTING DETAIL

NTS

TREES SHALL BE PRUNED IMMEDIATELY AFTER PLANTING TO REMOVE DEAD, BROKEN, DISEASED, DYING OR RUBBING BRANCHES. CO-DOMINANT STEMS LESS THAN 4 INCHES IN DIAMETER AT THE FORK SHALL BE PRUNED OFF AND ONE MAIN STEM SHOULD REMAIN. TREE TOPPING OR HEADING IS NOT PERMITTED AT ANY TIME.



PLANTING PROCEDURES: BALLED AND BURLAPPED TREES

(APPLIES TO BOTH DECIDUOUS AND CONIFEROUS TREES)

1. ALWAYS HANDLE TREE BY ROOT BALL;
2. GENTLY LOWER OR ROLL ROOT BALL INTO HOLE & ADJUST TREE TO UPRIGHT POSITION, SIGHTING THE TREE TO BE SURE OF A VERTICAL ALIGNMENT;
3. ROOT COLLAR SHOULD BE SLIGHTLY (1"-2") ABOVE SURROUNDING GRADE - DO NOT PLANT TOO LOW;
4. REMOVE WIRE BASKET (IF PRESENT) COMPLETELY IF THE ROOT BALL WILL STAY TOGETHER, OR IF ROOT BALL APPEARS LOOSE, LEAVE WIRE BASKET IN PLACE & REMOVE AT LEAST THE UPPER 1/2 AFTER PLACING IN HOLE;
5. REMOVE TWINE/SISAL & BURLAP AS COMPLETELY AS POSSIBLE, CHECK ALIGNMENT OF TREE;
6. BACKFILL LAYERS OF SOIL IN THIRDS, DEEP WATERING WITH EACH LAYER TO REMOVE AIR POCKETS, UNTIL HOLE IS FULL;
7. LIGHTLY TAMP SOIL TO ELIMINATE AIR POCKETS;
8. REMOVE ALL TWINE FROM AROUND TRUNK AND BRANCHES TO PREVENT GIRDLING;
9. REMOVE TOP 1/2 OF WIRE BASKET IF IT WASN'T REMOVED EARLIER;
10. COMPLETE BACKFILLING AND WATER THOROUGHLY;
11. REMOVE ALL TAGS & LABELS TO PREVENT GIRDLING LIMBS;
12. MULCH WITH DOUBLE GROUND HEMLOCK MULCH TO A DEPTH OF 3 - 4", KEEPING MULCH 3" AWAY FROM TRUNK, MINIMUM 5'-0" DIAMETER;
13. DO NOT STAKE TREES.

Interactive Tree Tags and *My Plants Map*

<<http://info.plantsmap.com/help/what-is-my-plants-map/>>



Plantsmap.com is a community website that hosts botanical collections for individuals and organizations. The free My Plants Map tools allows you to document, organize, map, tag and share information about plants. We believe this could be a great way to engage the community in the Village Canopy Management Plan.

- Organize photos, growing information, and specimen notes all in one place
- Digital plant journal that is accessible from your computer, tablet or smartphone
- Locate each plant on a map of the town area
- Blog section for community members to post
- Order custom interactive metal tree tags with QR codes
- Create event pages to be shared on websites and social media

Products and Prices

Tags

\$4.00 each



- Size: 3.28" x 1.78"
- 3 lines of text
- [QR code links to your plant profile on Plants Map](#)
- Available with or without hole
- [See optional branch tag attachment](#)
- [View Tag Templates](#)
- [See our My Tags Order process](#)

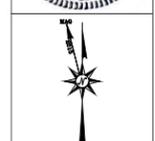
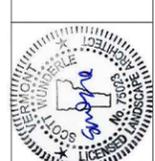
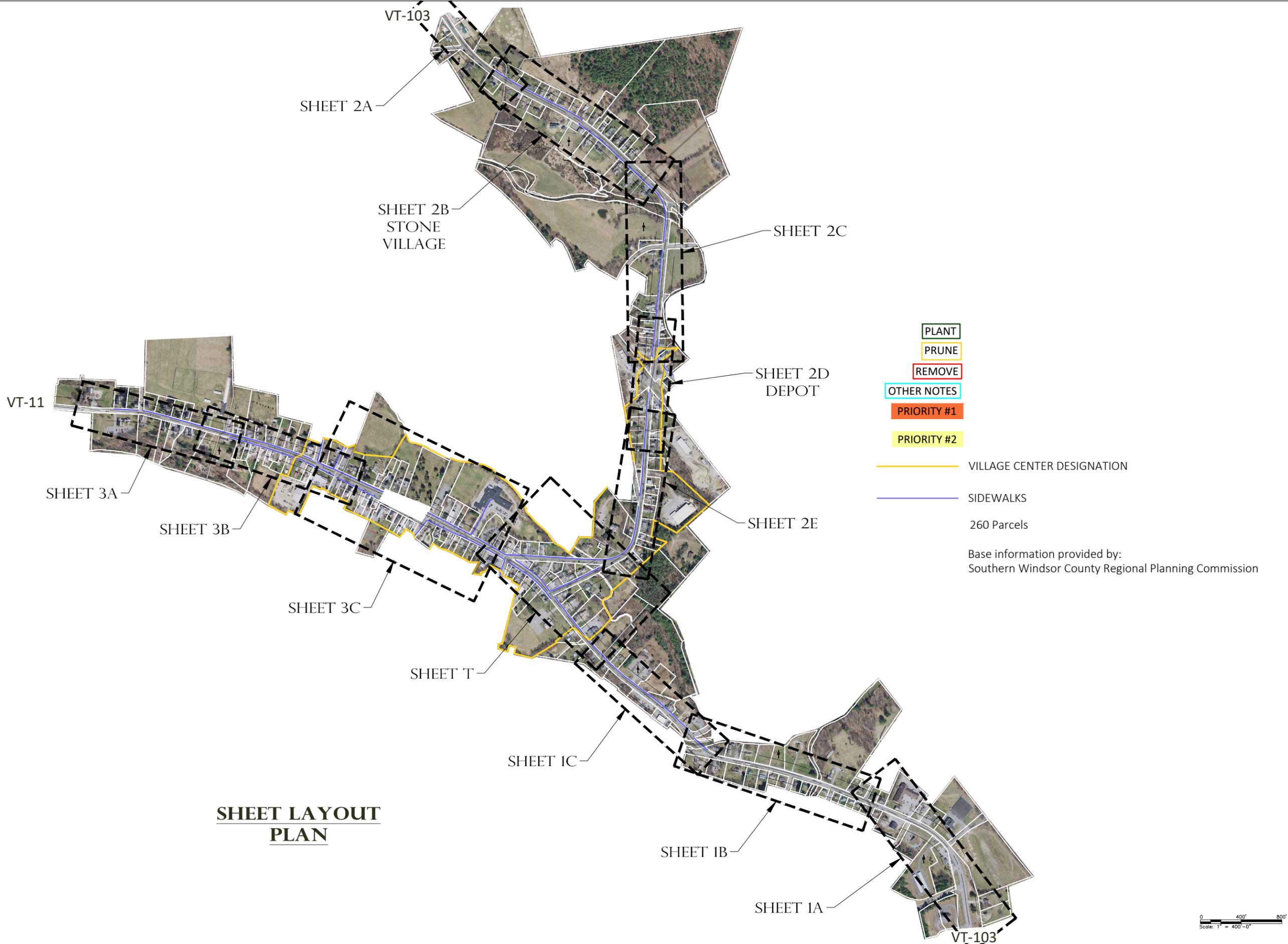
Signs

\$6.00 each

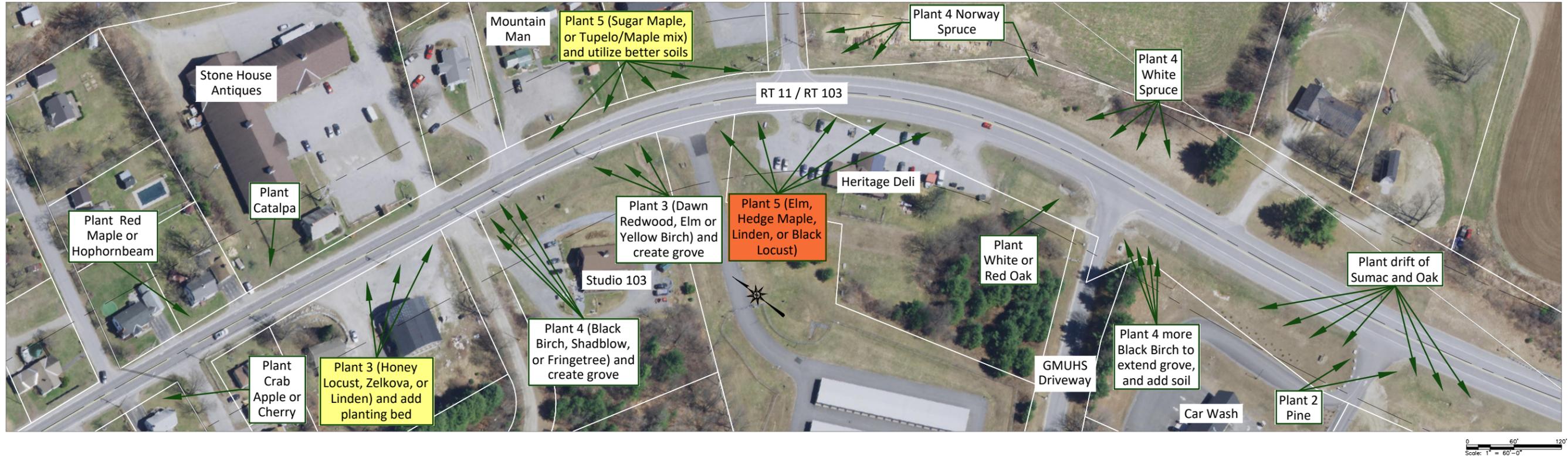


- Size: 4.75" x 3.35"
- 4 lines of text
- [QR code links to your plant profile on Plants Map](#)
- Available with or without hole
- See optional hardware attachment below.
- [View Sign Templates](#)
- [See our My Tags Order process](#)

TITLE	QUANTITY	PRODUCTS	TEMPLATE	LINE 1	LINE 2	LINE 3	LINE 4
		SIGN	S1	TITLE	BOTANICAL NAME	COMMON NAME	TITLE
<u>Japanese Stewartia</u>	1	SIGN	S1	Line 1: BOTANICAL NAME	Stewartia pseudocamellia	Line 2: COMMON NAME	Japanese Stewartia
				Line 3: FAMILY	Theaceae	Line 4: PROFILE NAME	Cossey Botanical Park Arboretum
<u>Contorted Beech</u>	1	SIGN	S1	Line 1: BOTANICAL NAME	Fagus sylvatica 'Tortuosa'	Line 2: COMMON NAME	Contorted Beech
				Line 3: FAMILY	Fagaceae	Line 4: PROFILE NAME	Cossey Botanical Park Arboretum



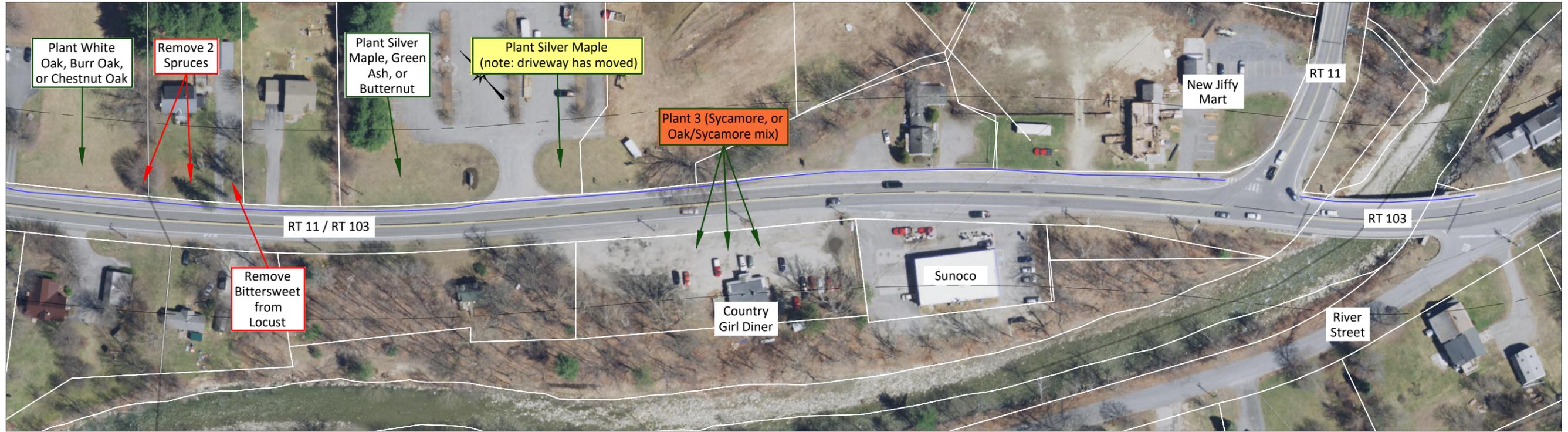
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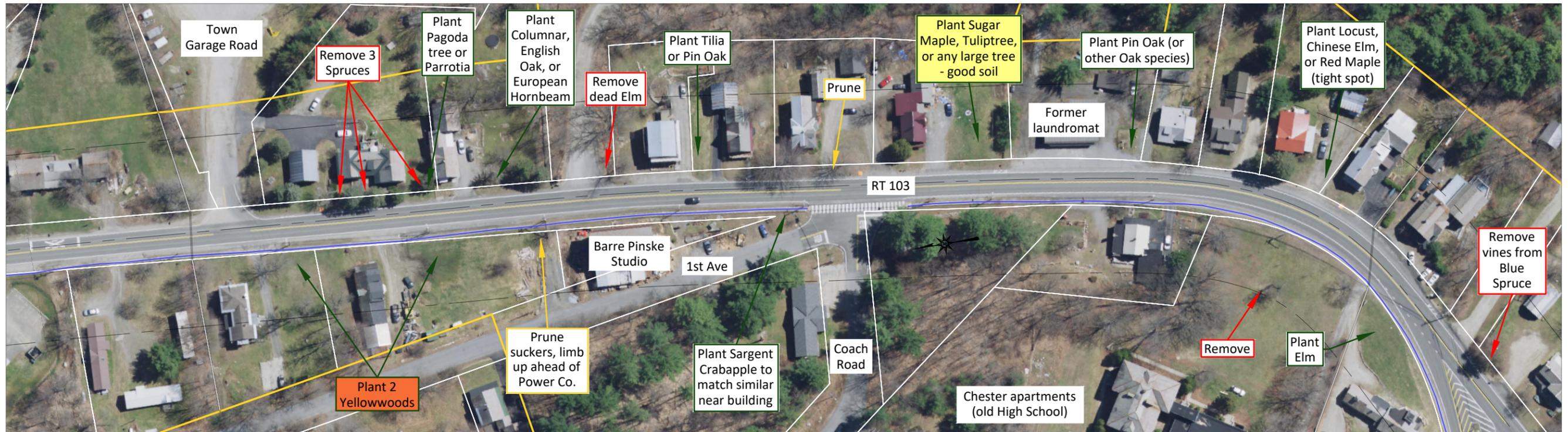
1B



1C



2E

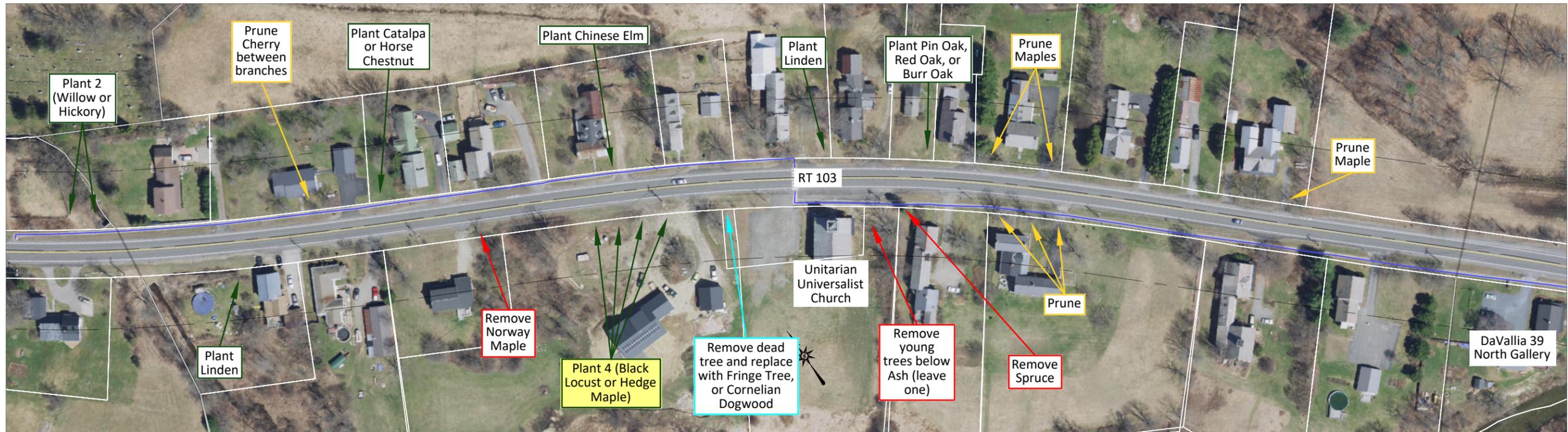


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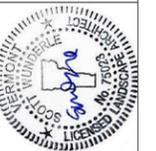


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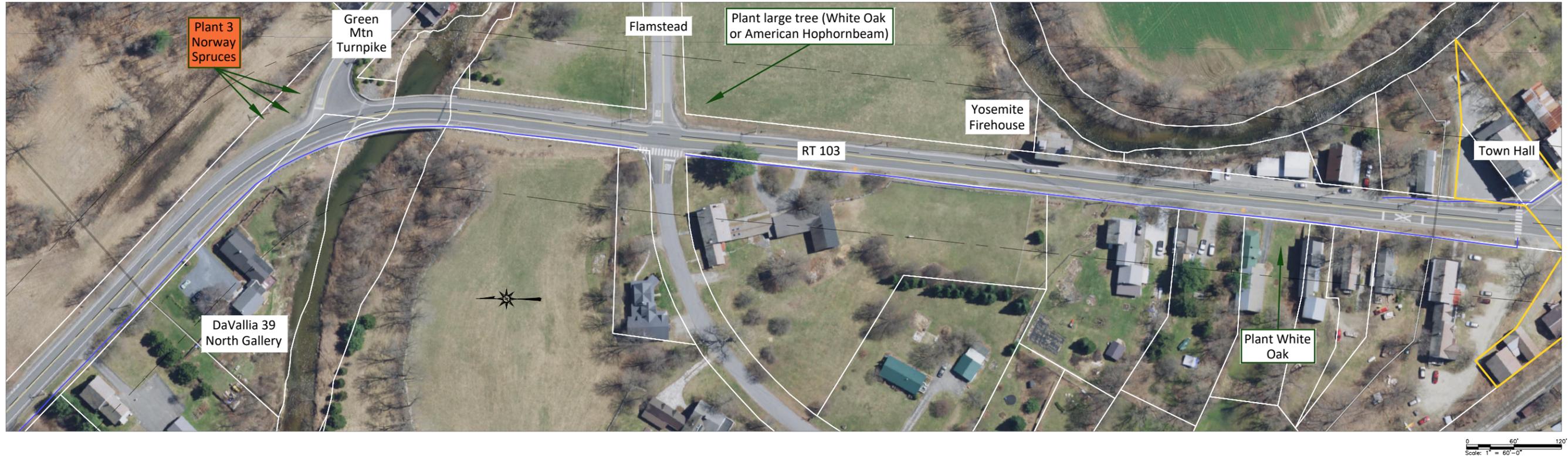
2B - STONE VILLAGE



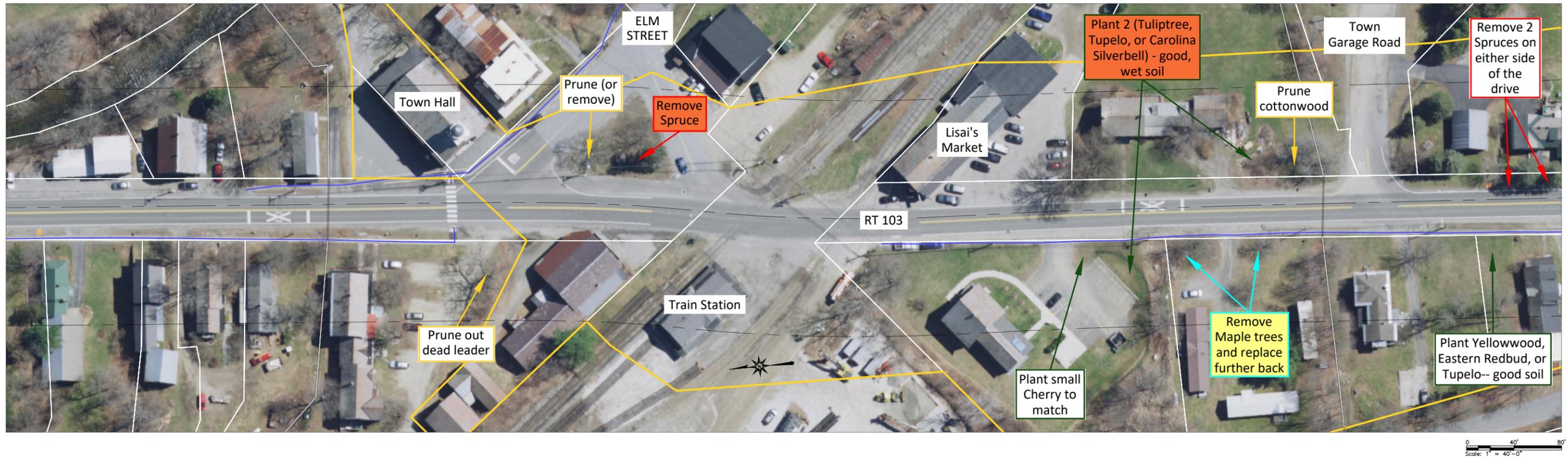
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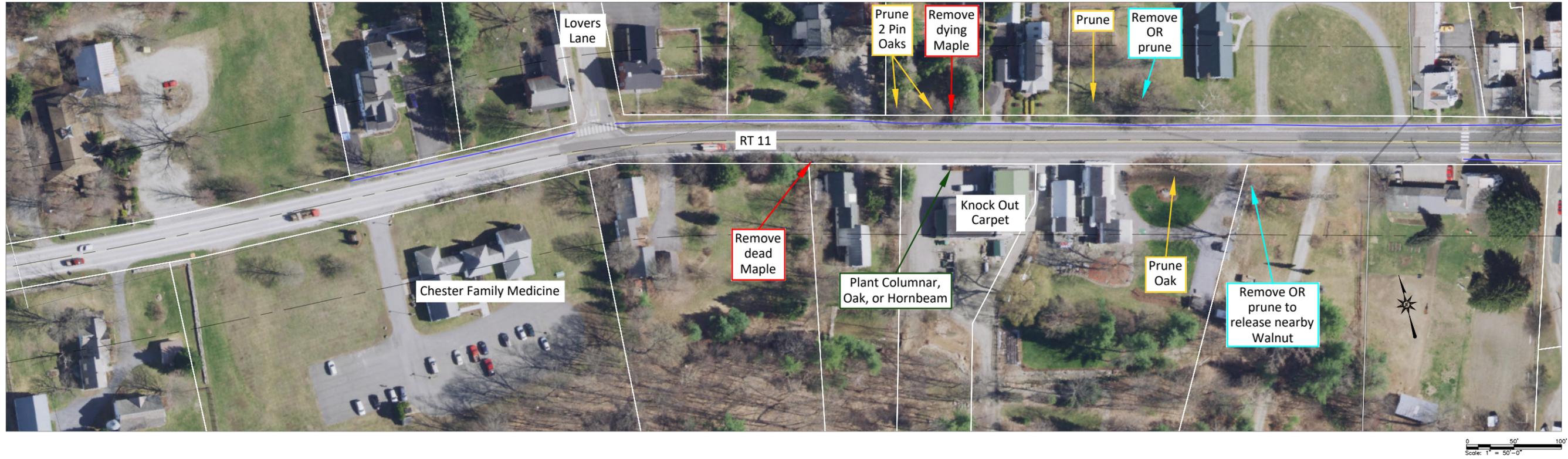
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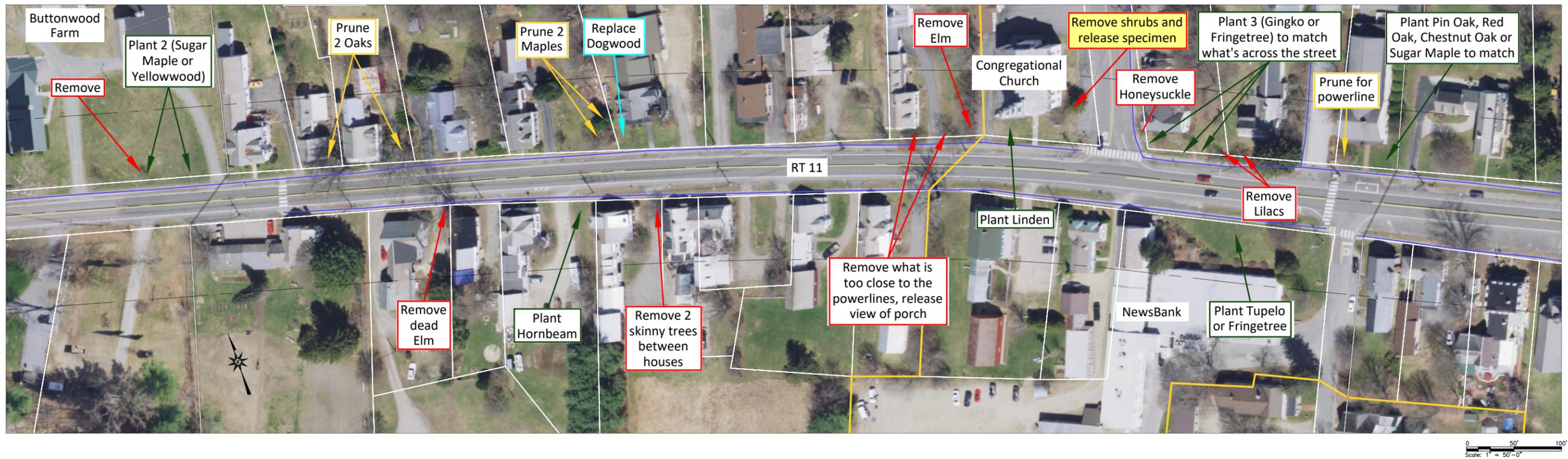
2D - DEPOT



3A



3B



3C - THE GREEN



T - VT-103 & VT-11

