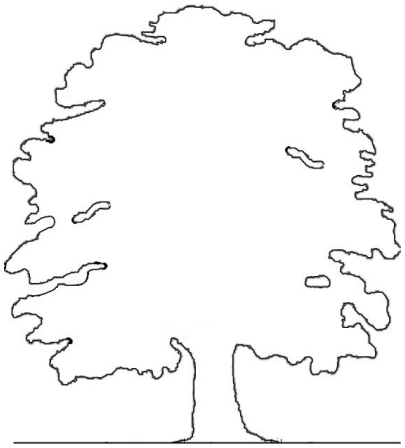
TOWN OF GLENVILLE

LANDSCAPE MANUAL



Prepared by the
Town of Glenville Economic Development and Planning Department
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INTRODUCTION

Landscaping provides many community benefits. It softens the appearance of buildings and parking lots, provides shade, cleans the air, and treats stormwater. Tree-lined streets are often a source of civic pride and attractively planted developments can raise property values. Landscaping also reaps economic benefits by increasing customer patronage to retail outlets.[1] In addition, studies have shown that the presence of landscaping is tied to lower levels of crime and aggression in urban areas.[2]

This manual provides guidelines for the selection, placement, and installation of landscaping in the Town of Glenville. The standards included here are intended to integrate landscaping into the site and provide for the vitality and longevity of landscaping materials. The goal is not to restrict development. Rather, the intent is to extend the positive environmental and aesthetic benefits of landscaping to all commercial development within the Town.

This manual is intended to supplement Article 19 of the Town of Glenville Zoning Ordinance. This manual is not intended for use as strict interpretation of law, nor is it a regulatory document.

- Text printed in normal type is actual language from the zoning ordinance.
- *Text printed in italics is explanatory language.*

1 Source: Center for Urban Horticulture, University of Washington College of Forest Resources, 1998. "Urban Forest Values: Economic Benefits of Trees in Cities". Human Dimensions of the Urban Forest Fact Sheet No. 3. http://www.cfr.washington.edu/Research/fact_sheets/29-UrbEconBen.pdf

2 Source: Kuo, F. C., and W. C. Sullivan. 2001. "Environment and Crime in the Inner City: Does Vegetation Reduce Crime?". *Environment and Behavior* 33 (3):343-367. http://www.herl.uiuc.edu/canopy.htm

PURPOSE

- To provide visual screening of parking areas and along property boundaries so as to preserve the existing visual qualities of adjacent properties, and to generally improve aesthetics.
- To reduce surface runoff and minimize soil erosion through the filtering and soil retention capabilities of landscaped areas and green space.
- To moderate the microclimate associated with large development schemes by using vegetation that provides shading, heat absorption, carbon dioxide absorption, and oxygen production.
- To enhance the overall visual quality of new development by providing a variety of plant materials, in addition to green space, that is consistent with native vegetation.

APPLICABILITY

All projects requiring site plan review as identified in Article 5 of this Ordinance (including Planned Development Districts), all conditional use permits, and all use variances that involve new construction shall be subject to the requirements of this Article. Single-family dwellings, individual buildings used for two-family dwelling purposes, and residential accessory structures are not subject to the provisions contained herein.

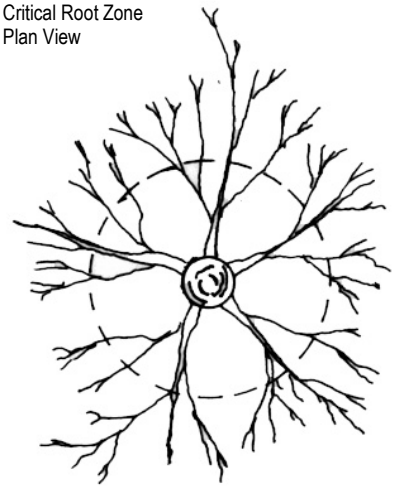
FIGURE 1: Landscape buffering Target from adjacent neighborhoods

FIGURE 2: Trees and shrubs located in front of McDonald's, adjacent to Route 50

PRESERVATION OF EXISTING CONDITIONS

- All landscaping will attempt to preserve and retain, insofar as possible, the natural contours, soil, trees and plant life existing on the site.
- Where possible and reasonable, any trees greater than 10 inches in diameter at breast height of desirable species and in good health and sound structure shall be retained on the site and protected during development with a substantial fence not less than four feet high installed at the critical root zone.

FIGURE 3
Critical Root Zone
Plan View

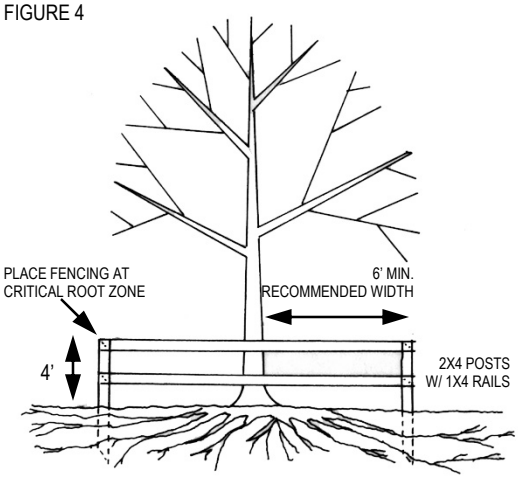


WHAT ARE CRITICAL ROOT ZONES?

Contrary to common belief, tree roots usually extend past the perimeter of the branches. In fact, the root zone of some trees is three times the area of the drip line. The critical root zone (fig. 3) is equal to one foot for every inch of diameter at breast height (DBH). This is the part of the root system which is most important to the survival of the tree.

When the retention of certain trees is integral to a landscape plan, it is necessary to protect as much of the root system as possible. Although cutting roots is the most common danger in construction areas, trees also can suffer if the soil around their roots is compacted by large equipment parked within the drip line. Fencing, like the example in figure 4, can protect the tree from some of the deleterious effects of nearby construction. Any damaged roots should be cut cleanly.

FIGURE 4



WHICH TREES SHOULD BE RETAINED?

Deciding which trees on a site should be retained is a balancing act. The ordinance was not written to hamper development; however, neither does it condone the complete removal of all vegetation on commercial sites. The purpose of the ordinance requires the developer to carefully consider the role of existing vegetation in a proposed site plan. Answering the following questions can guide the decision making process.

- *Does the tree lie within the building envelope? Can site elements, like entrances or service roads, be shifted to retain desirable trees?*
- *What is the condition of the tree? Is it healthy, or does it suffer from disease or old age?*
- *Is the tree species compatible with the site plan? For instance, retaining a salt-sensitive tree may not be wise if it will be located next to a new road.*
- *Can a healthy tree be moved? Small trees can sometimes be moved on-site using a tree spade.*

MINIMUM LANDSCAPE AREA

- All non-residential uses will retain at least 35 percent of the property as green space.
- All multi-family projects will retain at least 40 percent of the property as green space.
- Any property being developed for non-residential purposes or multi-family development will maintain a minimum of 25 feet of green space between the street right-of-way and the parking lot. Landscaping and/or curbing is required in order to prevent vehicle incursion. Furthermore, no vehicles will be parked in this 25 foot green area.

FIGURE 5

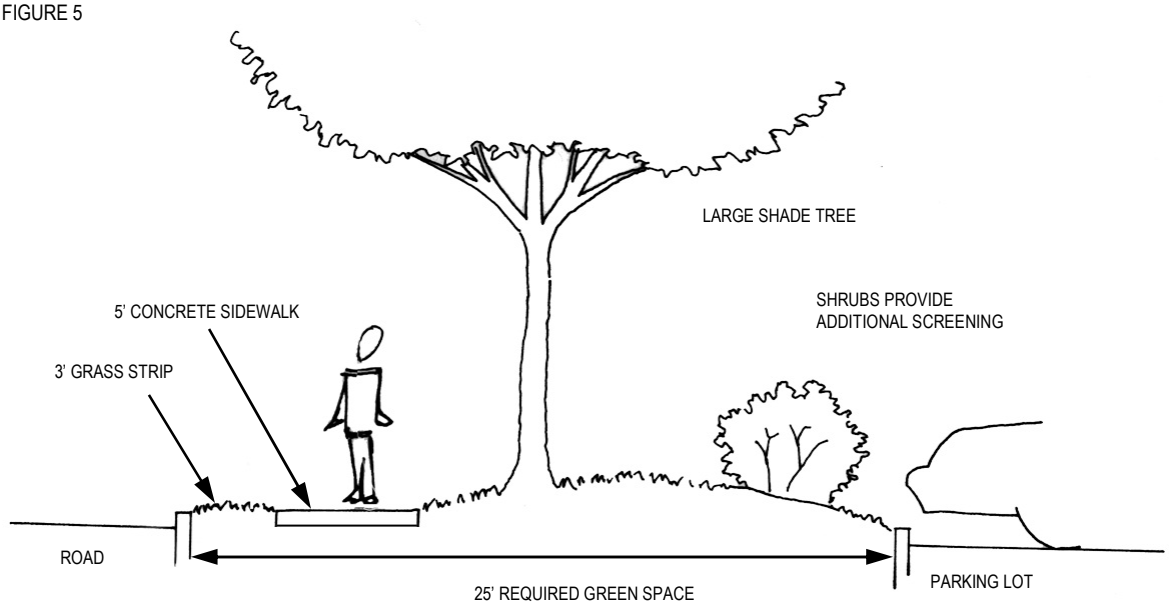


Figure 5: A section diagram showing conceptual green buffer between the parking lot and the street. In this case, sidewalk requirements were integrated into the buffer area.

Figure 6: An example of a parking buffer at Hannaford Plaza which does not integrate sidewalks. Shade trees, groundcovers, and shrubs effectively provide shade and screen some cars.

FIGURE 6

LANDSCAPE AREAS IN PARKING LOTS

- All parking lots shall be landscaped around the periphery of the lot to buffer the visual impact of the parking lot on adjacent properties and streets.
- Parking lots with 20 or more spaces are to be subdivided by internal landscape islands. Landscape islands are to be equally distributed for maximum environmental and visual effect, with not less than one island for every ten parking spaces. Each landscape island should contain at least one medium or large shade tree.
- Landscape areas in parking lots may be used for stormwater management. Stormwater management areas which abut parking lots and do not have curbs must have concrete curb stops for each parking space to prevent vehicle intrusion into landscape areas. Landscape areas which are not to be used as part of stormwater management must have 6" concrete or granite curbs.

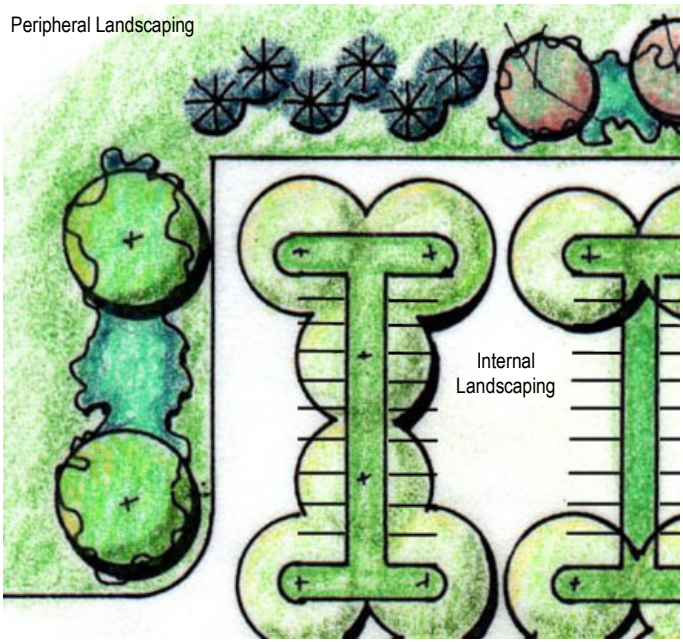


FIGURE 7

Figure 7: This conceptual plan detail contains both internal and peripheral landscaping for a parking lot. The peripheral plant material features a mixture of small trees, conifers, and shrubs that buffer the lot from surrounding properties. The internal landscaping was chosen to maximize shade and uses medium to large deciduous trees. These I-bar landscape islands also provide adequate soil volume for healthy tree growth. However, smaller landscape islands may also be used to great effect, given enough soil volume and proper distribution throughout the parking lot. See page 10 for more information about the size of parking islands.

PEDESTRIAN AMENITIES

- All landscape plans must include grass strips and sidewalks along streets and roadways as specified in the Town of Glenville Sidewalk Ordinance. These should be located within the street right-of-way whenever possible. The Planning and Zoning Commission or Zoning Board of Appeals may, at its discretion, allow applicants to reserve eight feet along the pavement edge for future sidewalk construction.
- All landscape plans must include shade trees planted in a tree lawn located between 10-15 feet from the edge of pavement. Trees shall be planted no more than 30 feet apart.

FIGURE 8

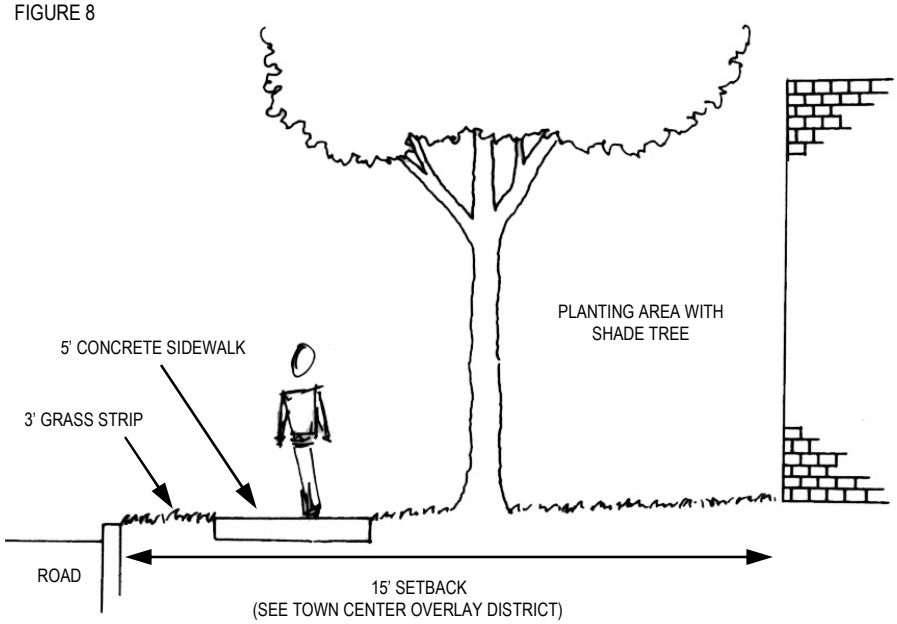


Figure 8: The Town Center Overlay District calls for commercial properties to be setback between 15—35 feet from the street right of way. This diagram illustrates how the decreased setbacks can work with the landscaping requirements for grass strips, sidewalks, and street trees. In this case, the shade trees have been integrated into the landscaping near the face of the building.

FIGURE 9

Figure 9: Another application of pedestrian amenities features landscaping combined with outdoor dining or plaza space. In this case, the developer should consider the use of structural soil in the planting pits to insure tree health.

PLANT MATERIAL AND INSTALLATION

- Only nursery-grown plant materials shall be acceptable. All trees, shrubs and ground cover shall be planted according to the accepted standards of the American Association of Nurserymen.
- Minimum Size. All deciduous trees shall have a minimum caliper of 2 ½ inches DBH (diameter at breast height). Size of evergreen trees and shrubs shall be allowed to vary depending on location and type of plant material (species). Landscaping meant to screen will be effective immediately upon planting and will retain its usefulness as a screen year-round. Consequently, trees and shrubs meant to serve as a screen will be of such a height, width and density as to immediately act as an effective screen.

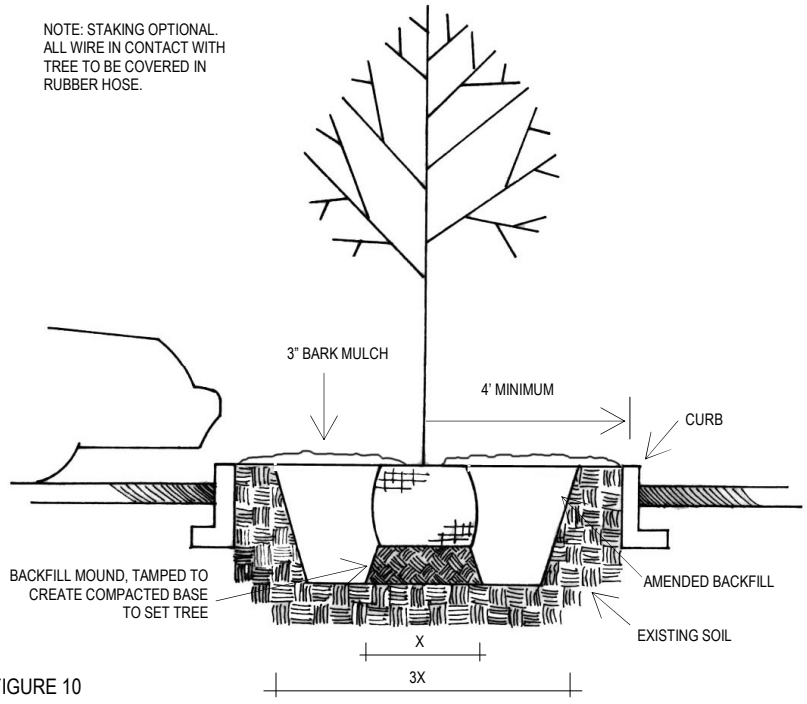


FIGURE 10

Figure 10: This is an illustrative planting detail for a tree located within a parking lot island. Landscape plans do not need to include details for every plant which will be installed. However, one detail should be included for every type of plant (tree, shrub, or ground cover). Details should be technical construction drawings and rendered to scale.

MINIMUM PLANTING AREA

- No landscape island will be less than 81 square feet in area, and shall have no dimensions less than nine feet. Landscape islands may be smaller if structural soil is used, with the approval of the Town of Glenville Planning Staff.
- All landscape areas in parking lots shall be excavated to a depth of three feet and backfilled with amended soil. Backfill should be free of aggregate base, construction debris, or other materials detrimental to optimal plant growth.

FIGURE 11

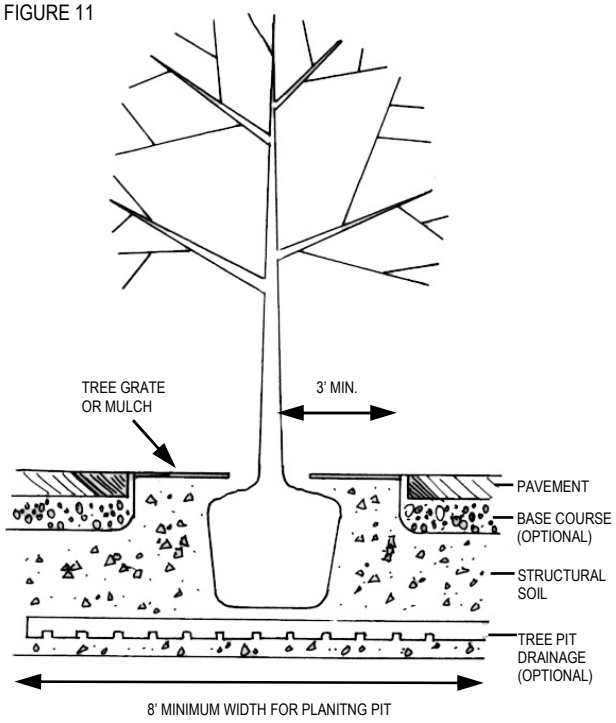


FIGURE 12

WHAT IS STRUCTURAL SOIL?

Structural soil is a planting medium developed by researchers at Cornell University's Urban Horticulture Institute. This soil mix was designed to alleviate the problems caused by soil compaction found in urban environments. The load bearing requirements and engineering standards which support pavement, such as parking lots or sidewalks, are detrimental for root growth. These standards not only prevent roots from spreading to their full extent, but also limit the amounts of oxygen, nutrients, and water necessary for trees to survive. Consequently, urban trees typically live for only 7-10 years, compared to 50 years possible in better soil conditions. In addition, tree roots in urban settings often heave the pavement, as the roots attempt to work their way through the sub base material.

Structural soil provides a solution by creating a load bearing matrix which supports tree growth. It is a mixture of uniformly graded crushed stone and loamy soil, held together with a hydrogel slurry. The crushed stone bears the load required by the pavement, while the soil which fills the gaps allows for the oxygen, water, and nutrients necessary for tree health. Additional drainage can be added to insure that the planting pit does not flood.

Figure 11: Construction detail showing installation of structural soil under pavement.

Figure 12: Two Litteleaf Lindens. Tree on left was grown in traditional sidewalk tree pit. Tree on right was grown in identical tree pit, using structural soil. Source: Urban Horticulture Institute, Cornell University. http://www.hort.cornell.edu/department/faculty/bassuk/uhi/

LANDSCAPE MATERIALS

- Plant material shall be selected with respect to scale, purpose/function, and allotted amount of space. In addition, although plant materials may be listed under one category, they may also meet the requirements of another, depending on usage. A list of recommended plant material is on file with the Town of Glenville Economic Development and Planning Department. *This list is also included at the end of this manual.*
- Landscape Plans specifying more than 10 trees must provide a mix of tree species or cultivars.
- All areas not covered by main or accessory structures, walks, and vehicular use areas must be covered by one or more of the following materials: turf grass, organic mulch, ground cover, shrubs, vines, hedges, or landscape pebbles or rock.

WHICH PLANT WHERE?

The plants on every landscape plan should be chosen carefully to insure site suitability. A thorough site analysis should be performed before selecting plant material. The following are some factors to consider:

FIGURE 13

- ***Size.*** *One common mistake is the selection of plants which are too large for their environment. Soil volume and location of overhead wires or lights are common constraints on plant size.*
- ***Soil Conditions.*** *Some plants require specific soil conditions in which to thrive. Considerations include pH, compaction levels, drainage, and the presence of pollution.*
- ***Climate/Microclimate.*** *Glenville is in the USDA Plant Hardiness Zones 4b & 5a. Plants should be selected accordingly. In addition, available sunlight at the site should be considered when choosing trees and shrubs.*
- ***Disease/Insects.*** *Some plant material is more subject to damage by disease and insects. Avoid selecting species which are known to be susceptible.*
- ***Purpose.*** *Each plant on a landscape plan should serve a specific function, such as shading, screening, erosion control, or general beautification.*

FIGURE 14

Figure 13: An inappropriate choice of trees has lead to a hazardous situation. Poor pruning has jeopardized the health and beauty of the tree. Source: City of Walnut Creek, California.
http://www.ci.walnut-creek.ca.us/tree%20care.htm

Figure 14: This tree pit is too small, leading to cracked and heaved pavement. Source: Urban Horticulture Institute, Cornell University.
http://www.hort.cornell.edu/department/faculty/bassuk/uhi/outreach/csc/ssoils/sld010.htm

MAINTENANCE

- All owners of land or their agents shall be responsible for the maintenance of all landscaping. This includes mowing and maintaining abutting right-of-ways, swales, and stormwater treatment areas. Landscaping shall be maintained in good condition so as to present a healthy, neat and orderly appearance at least equal to the original installation and shall be mowed or trimmed in a manner and at a frequency so as to not detract from the appearance of the general area. Landscaping shall be maintained to minimize property damage and public safety hazards, including removal of living, dead or decaying plant material, removal of low hanging branches and those obstructing street lighting.
- The owner shall replace dead, dying and/or seriously damaged plant materials within a reasonable period during the current (or immediate next) planting season. Any other damaged or missing elements, including but not limited to fences, bollards, signs, shrubs, street furniture, etc., of the approved plan must be similarly replaced by the owner. This will insure that landscaping remains in compliance with the final site plan as approved by the Planning and Zoning Commission.

LANDSCAPE PLAN REQUIRED

All projects subject to the requirements of this Article shall submit a landscape plan as part of the application for site plan review, conditional use permit, or use variance. Landscape plans must be prepared by a licensed landscape architect, architect, or engineer and must contain the following information:

- A legible planting plan illustrated on reproducible material drawn to a scale of no smaller than 50 feet to one inch. The planting plan may be included on the site plan.
- The planting plan will show all existing significant vegetation. Trees over 10" DBH must be shown individually with accurate dimensions for drip lines and caliper as well as species. Masses of trees less than 10" DBH, and other vegetation, may be illustrated by drip line only. The planting plan must clearly indicate which existing vegetation is slated for removal.
- A planting schedule listing the botanical name, common name, cultivar (if appropriate), quantity, and initial size of all planting material specified on the planting plan.
- Construction details illustrating planting techniques and tree protection (if appropriate).
- Calculations showing that minimum landscape area requirements have been met.
- Name and signature of the professional engineer, landscape architect, and/or architect who prepared the plan.
- Graphic scale and north arrow.

APPENDIX — RECOMMENDED PLANT MATERIAL

Small Trees

Botanical Name	Common Name	Selected Cultivars	Max. Avg. Height/ Width	Salt Tolerant?	Notes
Aver Beurgerianum	Trident Maple	Streetwise	30'/25'	Somewhat	Full sun, drought tolerant
Acer campestre	Hedge Maple	'Schictel's Upright' St. Gregory™	25'-35'/25'-35'	Somewhat	Full sun, may need pruning for street tree use
Acer truncatum	Shantung or Painted Maple	'Keithsform' 'Warrenred'	35'/25'	Unknown	Full sun, low branching may require pruning
Amelancheir Arborea	Downy Serviceberry, Shadbush	None	25'/15'	Somewhat	Moderate drought resistance, part shade/sun
Carpinus caroliniana	Ironwood, American Hornbeam	None	30'/25'	No	Partial shade, slow growing
Cercis canadensis	Eastern Redbud	'Northern Strain' 'Minnesota Strain'	30'/35'	Somewhat	Full sun/partial shade
Cornus Alternifolia	Pagoda Dogwood	Argentea	25'/15'	Somewhat	Short lived, edges of woods, edges of shaded waterways
Cornus mas	Corneliancherry Dogwood	'Golden Glory'	20'/20'	Somewhat	Full sun/partial shade, fruit can stain concrete
Crataegus crus-galli var. inermis	Thornless Cockspur Hawthorn	Crusader©	25'/25'	Somewhat	Full sun
Crataegus phaenopyrum	Washington Hawthorn	'Lustre'	30'/25'	Somewhat	Full sun, species has large thorns

Botanical Name	Common Name	Selected Cultivars	Max. Avg. Height/ Width	Salt Tolerant?	Notes
Malus spp.	Flowering Crabapple	'Adams' 'Cardinal' 'Doubloons' 'Sentinel'	Max. 20'/20'	Somewhat	Full sun, should choose disease resistant cultivar
Sorbus x hybrida	Oak-leaf Mountainash	'Fastigata'	35'/30'	Unknown	Full sun/partial shade
Tilia Cordata	Littleleaf Linden	'Halka'	20'/10'	No	Full sun, cultivar listed is small tree (species is large)
Medium to Large Shade Trees					
Acer x freemanii	Freeman Maple	'Armstrong' 'Jeffersred' Autumn Fantasy® Scarlet Sentinel™	50'-70'/ 25'-45'	Unknown	Full sun, possible graft incompatibility
Acer rubrum	Red Maple	Many	60'/ 50'-70'	No	Full sun, subject to chlorosis on high pH soil, some cultivars flood tolerant
Acer saccharum	Sugar Maple	Many	50'-60'/ 40'-60'	No	Full sun, some cultivars drought tolerant
Aesculus x carnea	Red Horsechestnut	'Fort McNair' 'Briotii' 'O'Neill'	50'/30'	Unknown	Full sun, fruit litter
Betula nigra	River Birch	Heritage® Dura-Heat™	50'/40'	Unknown	Full sun/partial shade, cultivars listed less susceptible to insect and disease problems

Botanical Name	Common Name	Selected Cultivars	Max. Avg. Height/ Width	Salt Tolerant?	Notes
Celtis occidentalis	Common Hackberry	'Prairie Pride'	60'/50'	Unknown	Full sun/partial shade
Cercidiphyllum japonicum	Katsura Tree	None	60'/50'	Unknown	Full sun/partial shade, drought sensitive
Cornus Florida	Flowering Dogwood	Many	30'/30'	Somewhat	Understory tree, not tolerate of heat/drought/pollution
Crataegus Crus-galli	Thornless Cockspur Hawthorn	Inermis	30'/30'	Some	Many pest problems, full sun, fruit
Fraxinus americana	White Ash	Many	70'/50'	Yes	Full sun, susceptible to ash yellows, fruit litter
Fraxinus pennsylvanica	Green Ash	'Marshall' 'Patmore'	60'/50'	Yes	Full sun, fruit litter
Ginkgo biloba	Maidenhair Tree	None recommended	80'/40'	Somewhat	Full sun, male cultivars only, fruit has noxious odor
Gleditsia triacanthos var. inermis	Thornless Honeylocust	Shademaster® Skyline® Halka™	80'/70'	Somewhat	Full sun, susceptible to disease and insects, cultivars listed are more resistant
Liquidambar Styraciflua	Sweet Gum	Grazam, Gumball, Moraine, Rotundiloba, and others	70'/50'	Moderate	Full sun, bottomland soils, shade tree, parks and campuses
Liriodendron tulipfera	Tulip Poplar	'Fastigiatum' 'Arnold'	90'/50'	No	Full sun, choose northern seed source, drought sensitive
Nyssa sylvatica	Sour Gum	None	60'/40'	Somewhat	Full sun, fruit litter
Ostrya virginiana	American Hophornbeam	None	50'/30'	No	Full sun/partial shade
Prunus sargentii	Sargent Cherry	'Columnaris'	50'/30'	Somewhat	Full sun, short lived, fruit litter
Quercus bicolor	Swamp White Oak	None	60'/60'	Unknown	Full sun, susceptible to chlorosis with high pH soil

Botanical Name	Common Name	Selected Cultivars	Max. Avg. Height/ Width	Salt Tolerant?	Notes
Quercus coccinea	Scarlet Oak	None	70'/50'	Unknown	Full sun, acorn litter
Quercus macrocarpa	Bur Oak	None	80'/90'	Unknown	Full sun, may be too large for street tree use
Quercus rubra	Red Oak	None	80'/70'	Yes	Full sun, acorn litter
Sorbus alnifolia	Korean Mountainash	None	40'/30'	Unknown	Full sun/partial shade
Tilia americana	Basswood	'Boulevard' 'Fastigata' 'Wandell' 'Lincoln' 'Sentry'	80'/60'	No	Full sun
Tilia cordata	Littleleaf Linden	'Glenleven' Greenspire® Shamrock®	70'/50'	No	Full sun
Tilia tomentosa	Silver Linden	Green Mountain® Sterling Silver™	70'/55'	Unknown	Full sun
Ulmus x species	Elm Hybrids	Many	70'/60'	Somewhat	Full sun, choose disease resistant cultivar
Ulmus americana	American Elm Cultivars	'New Harmony' 'Valley Forge' 'Delaware #2' 'Princeton' 'Washington'	80'/60-80'	Somewhat	Full sun, choose disease resistant cultivar
Coniferous Trees and Shrubs					
Chamaecyparis nootkatensis	Yellow Cedar	'Pendula'	45'/20'	Unknown	Full sun
Chamaecyparis obtusa	Hinoki Falsecypress	'Crispii' 'Kosteri' 'Nana'	60'/20'	Unknown	Full sun/partial shade, dwarf form cultivars available

Botanical Name	Common Name	Selected Cultivars	Max. Avg. Height/ Width	Salt Tolerant?	Notes
Chamaecyparis pisifera	Japanese Falsecypress	Many	70'/20'	Unknown	Full sun, dwarf form cultivars available
Ilex Glabra	Inkberry	Compacta, Ivory Queen, Chamzin, Shamrock	8'/9'	Yes	Needs ample soil moisture, protect from harsh winter exposure
Juniperus chinensis	Chinese Juniper	Many	Varies with cultivar	Unknown	Tolerant of drought and pollution
Juniperus horizontalis	Creeping Juniper	Many	1'-4'/ spread varies	Yes	Full sun, susceptible to blight
Juniperus sabina	Savin Juniper	'Broadmoor' 'Arcadia' var. *tamariscifolia*	4'/ spread varies	Yes	Full sun, choose cultivar for blight resistance, tolerant of drought and pollution
Picea glauca	White Spruce	Many	60'/20'	Yes	Full sun, tolerant of drought and minor flooding
Picea Omorika	Serbian Spruce	Nana, Pendula	100'/25'	No	Well-drained soil, pH adaptable, full sun
Picea pungens	Colorado Blue Spruce	Many	60'/20'	Yes	Full sun
Pinus resinosa	Red Pine	None recommended	60'/spread varies	No	Full sun, requires adequate drainage
Pinus strobus	Eastern White Pine	'Compacta' 'Fastigiata' 'Glauca' 'Nana'	80'/40'	No	Full sun, sensitive to air pollution and alkaline soil, cultivars for dwarf form available
Potentilla Fruticosa	Bush Cinquefoil	Many	4'/4'	Yes	Spider mites, persist through winter

Botanical Name	Common Name	Selected Cultivars	Max. Avg. Height/ Width	Salt Tolerant?	Notes
Pseudotsuga menziesii	Douglas Fir	'Fastigiata' 'Fletcheri'	80'/20'	No	Full sun, needs shelter from winter wind
Syringa Meyeri	Meyer Lilac	Palibin, Baibelle	8'/12'	Somewhat	Full sun, blooms in May, disease resistant
Taxodium distichum	Bald Cypress	None recommended	70'/30'	Somewhat	Intolerant of high pH soil, tolerant of wet sites
Taxus cuspidata	Japanese Yew	'Densa' 'Nana' Many Others	Varies with cultivar	Somewhat	Full sun/partial shade, tolerant of pollution, choose dwarf form for use as a shrub
Taxus x media	Anglo Japanese Yew	'Densiformis' 'Hicksii' 'Wardii' Many Others	Varies with cultivar	No	Susceptible to several diseases and insects, choose dwarf cultivar for shrub use
Thuja occidentalis	American Arborvitae	Many	40'/15'	Somewhat	Full sun, susceptible to ice damage, dwarf cultivars available
Tsuga canadensis	Eastern Hemlock	Many	60'/15'	No	Full sun/partial shade, intolerant of pollution
Thuja occidentalis	American Arborvitae	Many	40'/15'	Somewhat	Full sun, susceptible to ice damage, dwarf cultivars available, well-suited as a wind break
Tsuga canadensis	Eastern Hemlock	Many	60'/15'	No	Full sun/partial shade, intolerant of pollution