

Landscaping Guidelines and Technical Requirements: The purpose of the guidelines and technical requirements is to encourage plant longevity, minimize maintenance, and mitigate conflicts with other site features. An initial investment in high quality materials, careful planning and design, and proper construction techniques can result in plant longevity and long term maintenance cost reduction.

1. Definitions:

Approved Species: The City shall maintained a list of species considered appropriate for planting. The City may restrict applicant's use of approved species in certain situations where the species may be inappropriate.

Basic Use Area: Area dedicated to site's use, including buildings, parking, loading, driveways, streets, outbuildings, trash enclosures, utilities, landscaping, and grading necessary for the construction of the above uses. Surface water detention ponds are not part of the basic use area.

Biodiversity: The variety, distribution and abundance of living organisms in an ecosystem.

Buffer: Linear bands of vegetation, and/or space providing separation between two separate land uses.

Caliper: Standard measure of tree size for newly planted trees. The caliper inches of a tree is the diameter of the trunk. This dimension is measured at 6" above the ground when the trees are 4" caliper and less. For trees over 4" caliper, the diameter of the trunk is measured at 4.5' above the ground.

Canopy: The top layer or crown of trees.

Cutting: The felling or removal of a tree or any procedure in which the natural result will lead to the death or substantial destruction of a tree. Such acts include, but are not limited to, severe cutting back of limbs to stubs larger than three inches in diameter, and damage inflicted upon the root system of the tree. Cutting does not include normal pruning within the bounds of normal arboricultural practice.

Damage: Action or inaction which does not follow good arboriculture practices. Damage may include damage inflicted upon roots by machinery, changing the natural grade above the root system or around the trunk, destruction of the natural shape or any action which causes infection, infestation or decay.

DBH: Diameter at breast height, typically measured at 4.5' above the ground.

Detention Area: Area of a detention pond from the normal water level and up the side slopes to 10' offset from the high water level.

Disturbance: Any construction, development, removals, earth movement, clearing or other similar activity.

Diseased Tree: A tree with a health condition which makes it subject to a high probability of failure or as defined in our Tree Disease ordinance.

Drip Line: Imaginary line on the ground that is extended straight downward from the outermost edge of the canopy.

Foundation Landscape Zone: Within 15' of the building.

Invasive Species: A which exhibits, or has the potential to exhibit, uncontrolled growth and invasion or alteration of the natural functions of any native habitat.

Large Shrub: Large shrubs have a mature height over 6'.

Large Tree: Overstory deciduous trees with a mature height of at least 40'.

Medium Shrub: Medium shrubs have a mature height of 3'-6'.

Medium Tree: Deciduous trees with a mature height over 18' and up to 39'.

Native Species: A plant species that is indigenous to the local ecosystem.

Perennial: A plant, usually a flowering species, having a lifespan of more than two (2) years.

Prohibited Species: Species that may not be planted within the City that are typically invasive or considered a nuisance.

Root Protection Zone: A protected area around an existing tree established by offsetting the drip line 5' away from the tree center. 1-1.5' radius for each inch diameter.

Screen: A barrier that hinders sight and, potentially, access.

Small Shrub: Small shrubs have a mature height of less than 3'. Small shrubs are interchangeable with perennials, ornamental grasses and groundcovers to fulfill landscape standards.

Small Tree: Understory deciduous trees with a mature height of 18' and under.

Tree: Any self-supporting woody plant, with a stem diameter of at least 2.5" dbh, or a multi-stemmed trunk system with a definitely formed crown.

Undesirable Tree: Trees that are dead, diseased, structurally weak, invasive or trees that are hazardous to people, infrastructure or buildings.

Topping: The practice of removing whole tops of trees or large branches and/or trunks from the tops of trees; leaving stubs or lateral branches that are too small to assume the role of a terminal leader.

Whip: Small bare root tree with a juvenile root system.

2. **Species Selection:** Appropriate species selection is critical to maximize the benefits of plant materials. Healthy, long lived plants well suited to a site will reduce maintenance and replacement costs, while providing the most aesthetic and environmental gain. Native species in the built environment will supplement and connect the existing natural areas. Diversity is also important for an overall healthy and balanced landscape that is less susceptible to pests and disease.

- a. The City shall maintain a list of approved species. The list is based on Lino Lakes area natural vegetative cover and includes additional hardy, structurally sound non-invasive species. Approved species are classified by size. For each site, plants shall be selected based on mature size and adaptability to site conditions, such as microclimate, salt, pollution and other factors. The list of approved species is not exhaustive. Applicants requesting to plant a species not on the list shall submit species name, height, width, form, hardiness zone, and other relevant information. The City shall classify new species based on tree size standards.

The Approved Species List is hereby incorporated into these guidelines as Attachment A.

For large projects the City may require applicants to comply with the following requirements:

- 1) No more than 15% of the total number of plants should be composed of one genus.
- b. The City shall maintain a list of prohibited species. This list includes species that are invasive, or have other negative characteristics that may lead to ecological damage including structurally unsound, high maintenance, unsafe, or short lived trees.

The Approved Species List is hereby incorporated into these guidelines as Attachment B.

- c. Exposed soil is not allowed. All areas not covered by a structure or hardscape shall be planted and mulched in accordance with the following:
 - 1) In areas with low pedestrian traffic, the use of low maintenance turf, typically fescue blends, is encouraged. In areas of high pedestrian traffic, the use of turf mixes with a higher percentage of rye grass is encouraged.
 - 2) Turf in areas near roads and parking lots shall be salt tolerant.
 - 3) Groundcovers shall be turf, perennials, annuals, small grasses, or low spreading shrubs. Type of groundcover should be determined by site conditions and anticipated use. Mulch is acceptable in landscape beds and areas not suitable for living groundcovers.
 - 4) Hardy perennial forbs and ornamental grasses should be used in car overhang areas and places where snow may be stored.
- d. Annual plantings should be minimized within 10' of a tree. The process of frequently replanting may damage the tree's shallow root system.

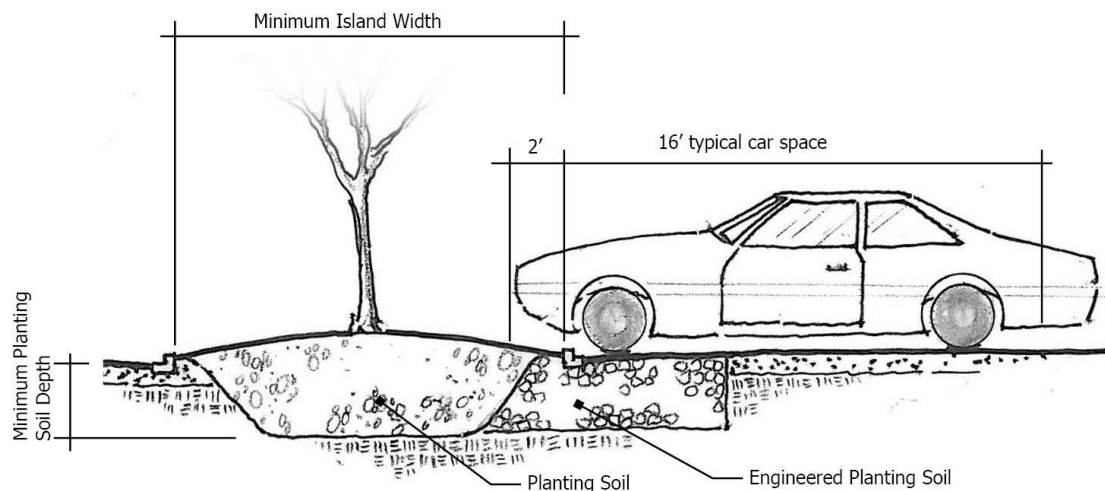
- e. Seed mixes should be used in large expanses of naturalized areas. The City shall maintain a list of approved seed mixes. Where seed mixes are used, the City may request that visible edge treatments be planted with more deliberate groupings of flowering plants.
- f. A permanent solid edge such as a 6" concrete, stone or other barrier is required between native seeded areas and turf unless otherwise approved by the City.

3. Planting Requirements:

- a. To promote development of a large, healthy canopy, trees shall be planted in accordance with the requirements in the following table and illustration:

Planting Requirements

Tree Size	Minimum island width for roots (back of curb to back of curb)	Minimum tree opening	Minimum planting soil depth	Minimum cubic feet of soil available per tree in a single bed	Minimum cubic feet of soil available per tree in a shared bed or three sided island
Large Tree	9'-0"	4' x 6' or 5' x 5'	30"	440 CF	400 CF
Medium Tree	6'-0"	4' x 6' or 5' x 5'	30"	300 CF	270 CF
Small Tree	5'-0"	4' x 5'	30"	250 CF	225 CF



Calculate planting soil volume by Length x Width x Depth

Minimum Island Width dimension can be reduced to the Minimum Tree Opening dimension if engineered planting soils are used beneath adjacent hardscape to achieve required soil volume.

- b. Soils: Landscaped areas need high quality soils that retain moisture for plants to use, but drain adequately. Soil shall be uncompacted existing soil, new planting soil or engineered soils designed to allow plant growth. Proper soil preparation helps to ensure long term survival of the plants and to reduce the need for ongoing maintenance, additives, and pest control. Preexisting soils may be used and should be protected from compaction during construction. Soil shall be loosened if, at the time of planting, soil compaction exceeds the following parameters:

Soil Type	Bulk Density (in grams per centimeters squared)
Sandy	>1.70
Silty	>1.50
Clay	>1.25

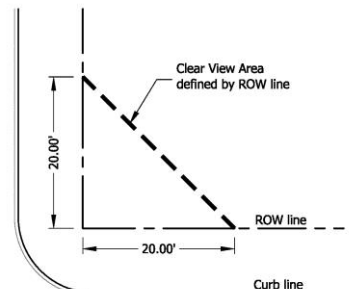
- c. Mulch: Mulch helps plant health by keeping the soil moist, protecting soil nutrients, preventing erosion, encouraging infiltration, and inhibiting weed growth. Mulch from decomposing materials such as wood chips enriches the soil over time. Although decomposing mulch needs to be replenished approximately twice a year to maintain adequate thickness, once plants grow together there is often need for little or no mulch. Mulch shall comply with the following requirements:
- 1) Provide mulch at a depth of 4" for shredded wood or bark and 3-4" for rocks or other non-organic matter.
 - 2) Provide at least one foot of mulch beyond planting ball or extended bare roots of the tree.
 - 3) Prohibit mounding mulch at the bases of trees, or allowing mulch within 4" of plant stems and trunks, as this will cause them to rot.
 - 4) If used, only water permeable fabric is permitted as a weed barrier.
 - 5) Leave one inch of space from the top of the mulch layer to adjacent hardscape surfaces to prevent spilling.
 - 6) The City may limit certain types of mulch in areas where safety or spilling may be an issue.
 - 7) Mulch should not be mixed with underlying soil.
- d. Fertilizer: When fertilizer is used, organic and slow release fertilizers are recommended.

- e. Drainage: Tree planting pits shall drain adequately. Drainage for trees may be accomplished through the use of non-compacted and well draining soils. The City may require the following drainage test: Dig 8" diameter holes 1' deep and fill with water. If the holes do not drain within 24 hours adjust bed design or composition in order to achieve proper drainage. If the underlying soils retain water, the applicant shall provide additional drainage measures.
 - f. Tree protection after construction: Bollards, barriers, or spacing may be necessary to protect trees from cars. Bike parking should be included to discourage locking bikes to trees. For tree protection during construction see Section Q.15.
4. **Tree and Infrastructure Placement:** Tree placement should be given consideration when locating overhead and underground utilities. Service utilities should be located outside of plant beds where they may conflict with tree plantings. Consider using conduits for buried utilities to allow future work with less disruption to roots. The clearances in the following table are recommended from the center of the tree trunk to avoid future conflicts:

Tree and Utility Spacing Recommendations

Utility	Distance to Center of Tree
Lights, Utility Poles, Fire Hydrants	10'
Water, Sanitary, Storm and Gas lines	6' from the center of the line.
Conduit for dry utilities (electric, cable)	3'
Utility clean outs and access points	3'
Overhead utility lines (consult utility company for additional requirements)	5' to mature tree canopy (may require trimming, topping is prohibited, see Section Q.10.f)

5. **Clear Vision Area for Local Residential Roads:** Shall mean the triangular area of a corner lot formed by the intersection of the right-of-way (ROW) lines and a line connecting them at points 30' from the intersection unless otherwise directed by the City (see illustration). Within this area, visibility shall be unobstructed between a height of 30 inches and 8 feet above the center line grades of the intersecting roads.



Clear Vision Area for County Roads: Shall be determined on a case by case basis, depending on the road alignment, grading, traffic speed and the nature of the intersection and is subject to County and City review.

6. The minimum plant size requirements are described in the following table:

Minimum Plant Size Requirements

Plant Type	Minimum Size*
Large trees	Bare Root - 1.75" Balled and Burlapped or Container - 2" caliper
Medium and small trees	Bare Root - 1.5" Balled and Burlapped or Container - 1.5" caliper
Evergreen trees	6' height
Large shrubs	3 gallon container
Medium shrubs, small shrubs and groundcovers	1 gallon container
Ornamental grasses and perennials	4" pot

* City may limit bare root plantings in areas of high visibility. In selected situations the City may allow ten (10) whip bare root plantings, or five (5) 3/4" caliper bare root plantings to be substituted for 1 large tree. Bare root plantings must be protected with rodent guards.

7. All boulevard trees shall be balled and burlapped and a minimum size of 2" caliper
8. Installation and Maintenance
- a. Installation: Proper planting is the first and most important step toward establishing healthy and low maintenance vegetation. All plantings shall be installed in accordance with standard practices of horticultural professionals.
- Stem girdling roots are often fatal for trees that have been planted too deep or have mulch or soil built up around the trunk. All trees shall be planted so that the first branch roots are at or barely below the surface. Tops of balled or burlapped balls should be dug down to the first branch roots.
- b. Maintenance: The property owner or if applicable, the homeowners association, shall be responsible for maintenance of landscape elements (plants, structures, pavement, etc.) so as to present a neat and aesthetically pleasing appearance free of any unhealthy or potentially unsafe conditions. Landscaping shall be maintained to be weed-free, healthy, trimmed, mown, edged, reseeded, pruned, and replaced with

similar plant species if necessary. Specific requirements for watering and pruning follow:

- 1) Watering: All plantings require regular watering for at least the first three years to get established. Once the root system has developed, many hardy plants, especially native plants, may only need supplemental watering in drought conditions.

Cultured turf areas and landscape berms shall be permanently irrigated. The City may allow low maintenance turf to be non-irrigated if a method for supplemental watering, such as a spigot or rain barrel, is provided.

For landscape beds ongoing irrigation may be provided through a permanent or temporary system, or by hand. (Note: typical installed irrigation systems do not provide adequate water for new trees.) Permanent irrigation systems with an automatic controller shall utilize rain sensing technology. Overspray should not fall outside of the landscaped area. Water efficient drip or underground irrigation is required in shrub and groundcover landscape beds for permanent systems. Temporary systems may use spray irrigation for shrubs or plugs. See Water Conservation Ordinance for additional watering requirements.

- 2) Pruning: Plants shall be pruned to avoid conflict with other structures, remove dead or diseased limbs and for optimum shaping. The City recommends that trees be pruned by a certified arborist every 4-7 years, which can help reduce maintenance costs. Topping or extreme crown reduction is prohibited unless the tree is a safety hazard or such measures are approved by the City.

Trees overhanging walkways should be pruned up to 7' when mature. Trees overhanging streets should be pruned up to 10' when mature. Smaller trees should receive limited pruning appropriate to the size and age of the tree. Branches that are hazardous for any reason shall be removed immediately. The City may direct pruning.

The property owner or if applicable, the homeowners association, shall be responsible for removing any trees or shrubs or parts thereof that are dead, diseased or overhang or interfere with traffic control devices, public sidewalks, or rights-of-way.

9. Ground cover

- a. Cultured grass should contain a mix of the following: bluegrass, fescue and ryegrass.

- b. Native grass mixtures shall be in accordance with Minnesota Department of Transportation Seed Mixes.

Attachment A - Suitable plantings and trees include, but are not limited to:

Large Deciduous Trees:

Common Name:

Oak

Maple

Hackberry (Thornless)

Birch

Honeylocust (Thornless)

Linden/Basswood (American and Little Leaf)

Ginkgo (male tree only)

Kentucky Coffee Tree

Delaware American Elm

Robusta Poplar

Niobe Weeping Willow

Hickory (Butternut)

Ginkgo

Elm (Disease resistant)

Scientific Name:

Quercus (all climatic Zone 4b or less varieties except Eastern p.worth)

Acer (all climatic Zone 4b or less varieties)

Celtis occidentalis

Betula (all climatic Zone 3 varieties)

Gleditsia tricanthos

Tilia (americana)

Ginkgo biloba

Gymnocladus dioicus

Ulmus americana "Delaware"

Populus X robusta

Salix X blanda

Carya cordiformis

Ginkgo biloba

Ulmus (Disease resistant varieties)

Medium Deciduous Trees:

Common Name:

Amur Cork

Ohio Buckeye

Scientific Name:

Phellodendron amurense

Aesculus glabra

Small Deciduous Trees:

Common Name:

Amur Chokecherry

Crabapple

Hawthorn

Ironwood

American Hornbeam

Scientific Name:

Prunus maackii

Malus spp.

Crataegus

Ostrya virginiana

Carpinus caroliniana

Evergreen Trees:

Common Name:

Fir

Spruce

Pine

Canadian Hemlock

European Larch

Cedar

Eastern Larch

Scientific Name:

Abies (all climatic Zone 3 varieties / *Pseudotsuga*)

Picea (all climatic Zone 4b or less varieties)

Pinus (all climatic Zone 4b or less varieties)

Tsuga canadensis

Larix decidua

Cedrus (all climatic Zone 4b or less varieties)

Larix laricina

Shrubs:

Common Name:
Dwarf-winged euonymus
Winged euonymus
Privet
Mock orange
Sumac
Common lilac
Japanese yew
American arborvitae

Scientific Name:
Euonymus alatus "compactus"
Euonymus alatus
Ligustrum spp.
Philadelphus spp.
Rhus spp.
Syringa vulgaris
Taxus cuspidata
Thuja occidentalis

Ground Covers:

Common Name:
Ground juniper
Periwinkle, myrtle

Scientific Name:
Juniperus spp.
Vinca minor

Wetland and Pond Plantings:

All wetland and pond plantings shall require City review and approval.

Attachment B – Prohibited plantings and trees include, but are not limited to:

Deciduous Trees:

Common Name:
Amur Maple
Norway Maple
Silver Maple
Siberian Elm
Cottonwood
Ash

Scientific Name:
Acer ginnala
Acer platanoides
Acer saccharinum
Ulmus pumila
(seed bearing varieties)
Fraxinus

Coniferous Trees:

Common Name:
Colorado Spruce

Scientific Name:
Picea pungens

Shrubs:

Common Name:
Buckthorn

Scientific Name:
Rhamnus (cathartica and frangula)