

Section 4

Tree Selection Criteria

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Tree Selection and Species

The current list of trees considered for planting within publicly owned boulevards and city parks provides a wide range of species and characteristics to meet the diverse site requirements found across the urban landscape. Based on the context of a potential planting site, low or tall growing, columnar or broad canopy trees with a variety of textures, colors, and seasonal interest can be selected. Thirty-one genera are represented by over 100 trees including both deciduous and evergreen species allowing for the development of a diverse urban canopy.

A complete list of trees can be found in section 6.2

Tree Selection Criteria

There are many factors that contribute to the growth of a healthy urban forest. One of the most important considerations is selecting the right tree for the right location by examining the environmental and site conditions, growth characteristics, and functional and design benefits of potential tree species.

With the emergence of new tree planting techniques and expanded use of structural soils the range of locations where urban street trees can successfully be planted will expand. Tree selection will be an important part of the success of these new technologies. Planting media, moisture and nutrient availability, and the increasing diversity of microclimates that these plantings will be placed in must be considered.

Environmental and site conditions

Soil: Urban soils vary greatly though compaction and reduced rooting volumes are typical. This negatively impacts root growth, rainfall infiltration, and nutrient availability for urban trees. Structural soil options exist and can improve tree success by increasing rooting volumes and porosity.

Available soil moisture: Reduced infiltration and increased stormwater runoff in urban areas reduces available soil moisture and can often lead to drought like conditions even when precipitation rates are normal. Drought tolerance must be considered as irrigation is typically not available.

Impervious surfaces: Urban areas have a high percentage of impervious surfaces which can reduce water infiltration, limit

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soil oxygen exchange, and increase ambient temperatures. Permeable pavers or other infiltration systems can increase available soil moisture while reducing stormwater runoff and are already being used in city projects.

Climate: Regional climate patterns and zone hardiness are primary considerations when selecting tree species. Recent evidence of shifting hardiness zones due to climatic changes may require adaptive tree selection to meet a wide range of environmental conditions. Local microclimates including land cover, wind patterns, solar access, rainfall, and temperature directly affect tree growth success and need to be considered.

Air quality: Urban areas have elevated levels of air pollution that can negatively affect tree growth. Proximity to industrial land uses and heavily traveled transportation corridors should be considered.

Deicing salt: Salts used to keep sidewalks and roadways clear during winter months can negatively impact tree growth. Spring runoff transports these salts into surrounding soils and road spray can coat tree stems causing bud damage.

Tree characteristics

Size and spacing: Mature canopy, trunk, and root structure size determine the amount of space that is required to support a tree without causing infrastructure damage or impinging on surrounding buildings and lighting. Small trees require less space and are typically planted at 25 foot intervals where utilities or buildings interfere with canopy growth while larger trees are planted at 40 foot intervals where limits to growth are fewer.

Form, texture, color, and seasonal interest: Matching tree characteristics to nearby architectural styles, community or historical identity, surrounding trees, and other contextual aspects adds to the visual unity and continuity of a street or neighborhood. The use of sequenced planting will require the consideration of how different tree species work together visually.

Leaf debris and fruit: Seasonal leaf and fruit drop can be a nuisance in urban areas and a safety concern in pedestrian walkways. Planting locations for fruit and nut bearing trees should be carefully considered in order to minimize the mess, maintenance, and potential conflicts with the pedestrian environment that may result from the increased debris of these

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species. These trees are best suited to parks, on wide parkways, and on private residential property. An exception to this is the use of species that produce smaller or persistent fruits including flowering crabapple, serviceberry, and oaks which are generally less messy than other fruiting species. Ginkgos will only be considered for planting on boulevards in certain circumstances because of the trees propensity to produce unpleasant fruit.

Pests and disease: While it is impossible to predict major pest or disease outbreaks, careful tree selection can minimize potential losses when problems do occur. Options include selecting new varieties of disease resistant trees, coordinating tree selection to promote city wide diversity, and planting the right tree in the right place to promote tree health and resiliency.

Past performance: Trees that perform well in the urban environment should continue to be used where appropriate, adhering to the diversity goals outlined above. New varieties including those from the University of Minnesota should continue to be used on an ‘on trial’ basis so that additional high performance trees can be added to the list of acceptable species.

Native Species: Tree species native to the Minnesota landscape are able to thrive in the local climate and have adapted a natural resistance to regional pests and diseases. Many of these trees require soil conditions not found in city boulevards. However, due to their ecological and habitat benefits, native trees should be used where appropriate.

Maintenance: Tree maintenance levels vary according to the growth characteristics of different species. Since Maintenance is scheduled by district on a rotational basis, not all trees are maintained annually. High maintenance trees such as those which contain weak wood or other structural issues, are rapid growers, or require excessive pruning to reduce the risk to public safety if not maintained annually will be avoided.

Location

Site Context: Diverse site conditions exist within the city ranging from commercial districts and industrial lands to residential neighborhoods, parks and parkways. Each of these areas has a unique combination of building and utility constraints as well as amount and type of sidewalk, curb, road, and parking infrastructure. Land use and land cover, density, and environmental conditions must be considered when selecting trees for these locations.

Boulevard Trees: The value of a boulevard planting site is determined by its width, location, type of grow space, potential infrastructure conflicts, presence of overhead utilities, and proximity to lighting, hydrants, signage, signals, and other trees. Observations about the underground rooting volume and structure as well as potential obstacles that exist within the planting area are also considered.

Function + Design

Environmental benefits: Trees are able to provide a number of ecological benefits within the urban landscape. Contributions to stormwater management, heat island mitigation, air quality improvements, habitat, and sustainability should be considered when planning and planting trees in the urban environment.

Human benefits: Trees provide a number of benefits to humans that should be considered including aesthetic, social, and health benefits; reduction in energy costs; sense of identity; visual unity and continuity; enjoyment of the outdoors; and a connection to nature.