

## **Corporation of the City of Peterborough**

### **Specifications CP 801.01; CPD 801.01; CPD 801.02; CPD 801.03; CPD 801.04; CP 801.02**

### **Tree Planting: Installation and Establishment and Recommended Species List for Street, Park and Site Plan Trees December 2024**

#### **1 Work Included**

- 1.1 The work included under these Specifications shall consist of supplying all material, labour, and equipment necessary for planting trees. All work shall be undertaken in accordance with Specification CP 801.01 and drawings CPD 801.01 - CPD 801.04 as applicable, or as directed by the City and in compliance with applicable Federal and Provincial Regulations and By-laws of the City of Peterborough.

#### **2 Examination of Work Site**

- 2.1 The Contractor will be responsible for obtaining all locates necessary prior to any work taking place and shall submit a copy of all required locates to the City upon request.
- 2.2 Commencement of the work shall imply acceptance of existing site conditions and no claim for damages or extras resulting from existing site conditions or defects will be accepted thereafter, except in cases where such condition cannot be known prior to or during the course of the work.
- 2.3 The Contractor shall report to the City in writing any existing site conditions encountered on the work site before and during performance of the work that may adversely affect performance of the work. No work shall commence or proceed until such reported site conditions are investigated, corrected and resolved in consultation with the City.

#### **3 Qualifications of Contractor**

- 3.1 The work shall be executed by personnel experienced in the planting and establishment of trees and under the on-site direction of a skilled and qualified foreperson.

## 4 Tree Selection and Substitution

- 4.1 Deciduous trees shall have a minimum caliper size of 50 mm and a maximum caliper size of 60 mm or 40 mm for smaller tree species when agreed in writing with the City. Coniferous trees shall have a minimum height of 100 cm and maximum height of 200 cm. Sizes may be altered as requested and specified by the City in writing.

The selection of trees shall conform to the Recommended List for Street, Park, and Site Plan Trees (Specification CP 801.02). Substitutions shall not be permitted unless approved in writing by the City.

- 4.2 The selection of trees from the Recommended List for Street, Park, and Site Plan Trees (Specification CP 801.02) shall endeavor to achieve a biodiversity target of no more than 10% of the same species, no more than 20% of the same genera and no more than 30% of the same family. Biodiversity targets should be kept in mind for tree selection but may not be achievable due to site conditions or landscape objectives.
- 4.3 No more than three different species/cultivars in an alternating pattern along the block of a single street shall be proposed for planting in new subdivision or development application plantings.
- 4.4 One species/cultivar may be proposed for planting on both sides along the length of a block except for the Oak (*Quercus*) genus, which must be separated from one another by another species.
- 4.5 Plantings within 30 m to naturalized areas must be species indicated as Native on the Recommended List for Street, Park, and Site Plan Trees.

## 5 Tree Planting Location

- 5.1 Trees shall be planted in accordance with a Landscaping Plan approved by the City.
- 5.2 The Landscaping Plan shall detail the planting location of proposed tree species/cultivars by a reference symbol on a composite plan showing all utilities and site infrastructure, both underground and surface facilities and amenities, including private driveways at a scale of 1:500. For legibility, driveway locations shall be shaded to differentiate between sodded areas.
- 5.3 The Landscaping Plan shall list the trees to be planted with the full botanical name and common name and the quantity of each species/cultivar organized under botanical family.

- 5.4 The Landscaping Plan for Street Trees shall conform to the location for tree planting as detailed on the Typical Right of Way Cross Section(s) approved for the development or as directed by the City. Tree planting locations outside the municipal Right of Way shall conform to design guidelines recommended by the City.
- 5.5 Spacing between Street Tree planting locations shall not be less than five (5) metres or greater than fifteen (15) metres along the Right of Way. Every effort shall be made to accommodate a minimum of one tree per lot usually centered on the lot frontage. Corner lots shall require one or more trees (usually two) on the flankage to conform to the above spacing requirements.
- 5.6 Tree planting locations shall adhere to the following clearance guidelines, except where approved or changed by the City:
- Minimum of 30 metres from the curb line of any arterial road intersection with a collector road
  - Minimum of 10 metres from the curb line of any collector road intersection with an arterial road
  - Minimum of 5 metres from sewer lines
  - Minimum of 4 metres from buildings and building entrances
  - Minimum of 4 metres from water hydrants
  - Minimum of 4.5 metres off-set from overhead utilities (exception for small growing species, 6 metres at maturity or less)
  - Minimum of 3 metres from opening side of hydro transformers, 1.5m from all other sides
  - Minimum of 3 metres from any lamp standard or utility pole
  - Minimum of 1.5 metres from any utility pedestal, mailbox, or edge of driveway, underground utilities and communication trenches
  - Minimum of 15 metres from a Stop sign or intersections – 15 m or in conformance with sight triangle
  - Minimum of 1.5 metres from Residential driveways or in conformance with sight triangle; Commercial driveways – 3 m or in conformance to sight triangle
  - Drainage swales – 1.5 metres or in conformance with grading design (top of slope)
  - Minimum of 0.20 metre to 1 metre from Property lines
  - Minimum of 1.5 Sidewalk edge – 1.5 metres and Curb face – 0.75 metre
- 5.7 Replacement trees will be planted at, or as close as possible to the location of a removed tree.

## **6 Plant Quality Control and Inspection**

- 6.1 Nomenclature of selected trees shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names in the latest edition of Standardized Plant Names.
- 6.2 All trees shall be individually labeled by the supplier. Labels shall record the common name and scientific name for the tree. Labels shall be removed by the Contractor only at the completion of the Guarantee/Warranty Period.
- 6.3 All trees shall be nursery grown and meet the current standards set out by the Canadian Nursery Landscape Association: Canadian Standards for Nursery Stock.
- 6.4 The City may optionally exercise the option to inspect trees before shipment at the nursery, upon delivery, at planting time, or after planting. This will in no way alter the requirement to replace defective trees or trees not meeting the quality standards required by this specification.
- 6.5 Approval of trees at source of supply shall not impair the right of the City to re-inspect trees upon arrival on the work site or during the course of the work and reject trees that have been damaged or that in any way do not conform to the Specifications.
- 6.6 All trees shall be sourced from a 'field-grown' location in a Plant Hardiness Zone (Canada) equal to or lower in number than Zone 5 unless otherwise directed by the City.
- 6.7 Trees shall be as specified and labelled, structurally sound, well-branched with a dominant leader (not headed back), free of disease, insect infestations, rodent damage, sun scald, frost cracks and other abrasions or scars to the bark. Roots shall be balanced and well developed. Non-occluded pruning wounds shall show sound wound wood on all edges of the cut.

## **7 Replacements**

- 7.1 At any time during the 2-year Guarantee/Warranty Period, any trees found dead or not in a healthy and vigorous growing condition or which in any other way do not meet the Specifications, shall be removed immediately and replaced in the next available planting season or the defects will be rectified immediately to the satisfaction of the City. Any required rectifications and/or replanting will be at the expense of the Contractor.

- 7.2 Replacements that are required during the warranty period as a result of any biotic or abiotic damaging agent or agents shall be the responsibility of the contractor.
- 7.3 All required replacement trees shall be the same size and species/cultivar as listed in the Tree Planting Plan and planted and maintained in accordance with the Specifications.
- 7.4 The Contractor will notify the City prior to replacing:
- any tree found dead,
  - not in a healthy and vigorous growing condition,
  - to a request for a replacement tree following a City planting inspection,
  - which in any other way does not meet the Specifications prior to replacement planting,

and will enact the replacement of the defective tree at the earliest available planting opportunity.

- 7.5 A two (2) year warranty period shall apply to the replacement tree from the date of satisfactory installation agreed in writing with the City.

## **8 Maintenance**

- 8.1 The maintenance of trees during the Guarantee/Warranty Period shall be the sole responsibility of the Contractor.
- 8.2 Maintenance shall include all measures necessary to establish trees in a healthy, vigorous and pest and disease free condition including; cultivating, weeding, watering (using a Treegator slow-release watering bag), pruning, pest and disease control, tree support adjustment/removal, and the replacement of trees that are dead or not in a healthy, growing condition, or which in any other way do not meet the Specifications.

## **9 Watering**

- 9.1 The 15-gallon (56 litres) Treegator slow-release watering bag shall be used to irrigate all deciduous trees for the entire warranty period (2 years). For Spring plantings, bags shall be installed at time of planting. For Fall plantings, bags shall not be installed until the following Spring. Over the course of the two (2) year warranty period, the watering bags shall be removed during the dormant season no later than November 1<sup>st</sup> and replaced the following growth season, no later than April 30<sup>th</sup>. At the end of the warranty period, the bag will become the property of the City and shall be removed and be delivered to the City to an agreed location.

- 9.2 Watering shall be completed by filling the 15-gallon (56 litres) Treegator bag for deciduous species, and by thoroughly saturating the ground around the root system for conifer species (50 L per tree, gently administered with low to no velocity when using a hose) once per week between the hours of 6.30 am to 3.30 pm, Monday to Friday from May to September inclusive, excluding civic and statutory holidays, throughout the warranty period. The Contract Administrator must be notified within 2 hours of filling the bags. **Failure to notify the Contract Administrator adequately will result in a written deficiency.**

- 9.3 The mulched tree pit shall always be kept free of any weeds higher than 100 mm throughout the warranty period.

- 9.4 Dead, diseased or dying branches, sprouts and epicormic growth shall be removed when apparent or upon request by the City throughout the warranty period.

## Handling of Plants

### 10

- 10.1 Throughout the duration of the installation, root balls, trunks, and branches shall be protected from sun and wind desiccation. Root balls shall be kept moist at all times when above ground.
- 10.2 Roots shall be evenly cut at the edges of the root ball or at the extension of undamaged roots for bare root trees. Trees with split roots shall be rejected.
- 10.3 Trees shall be transported with care taken to avoid damage. Branches shall be carefully tied in such manner so as not to break or damage trunks. Points of contact with equipment shall be padded.

## 11 Planting Soil

- 11.1 Prior to commencement of any Contractual tree planting, upon request by the City, a sample of soil representative of the material used for backfilling together with a nutrient, particle and pH analysis shall be made available to the City for approval. Planting shall not commence until backfill material is approved by the City.
- 11.2 Soil material excavated from tree planting pits as detailed in CPD 801.01 and CPD801.02 and shall be removed from the work site and disposed of by the Contractor. No material excavated from a tree planting pit shall be used to backfill after planting.

- 11.3 Planting soil for backfilling tree planting pits shall consist of a mixture of 5 parts Topsoil (OPSS 802.05) and 1 part peat moss or screened leaf compost blended in a uniform mixture. Backfill soil shall not be mixed in a frozen or muddy (saturated) condition and shall be a fertile, friable sandy loam capable of sustaining vigorous plant growth with an acidity range from 6.5 to 7.5 pH and free from any plant growth inhibiting compounds. Backfill soil shall be free from clay lumps and other extraneous matter. Stones shall be less than 50 mm in diameter shall comprise no more than 5 % of the backfill soil by volume.
- 11.4 During the backfilling process, Sulphur Phosphate (0-20-0 or other high phosphate fertilizer approved by the City) shall be applied into the planting hole after the first backfill soil lift (100 mm) as a band around the tree separated from roots by 8-10cm at the rate of 50 grams per tree.

## 12 Planting Pits

- 12.1 Tree planting pits for balled and burlapped trees (coniferous and deciduous) shall be excavated to achieve a width not less than 2 (two) times the diameter of the root ball (measured at the top of the root ball) and the same depth as the distance from the trunk/root flare to the bottom of the root ball (see CPD 801.01 and CPD 801.02).
- 12.2 To facilitate the measurement and excavation of the planting pit:
- The twine and the top 1/2 of the wire basket shall be removed from the root ball and prior to planting and removed from the site.
  - The burlap shall be cut away from the top half of the root ball and removed from site.
  - Surplus soil shall be carefully removed from the unwrapped top surface of the root ball to expose the trunk or root flare of the new tree without damaging the roots prior to planting. The tree planting pit shall be excavated to a depth such that the center of the root base rests on undisturbed soil with the now exposed root flare and surface roots at, or no more than, 50 mm above the surrounding undisturbed grade.

## 13 Pruning

- 13.1 Pruning of the tree to be planted will be achieved more easily and accurately if carried out before planting, where the crown of the tree is easily accessed from the ground by tipping the tree over.
- 13.2 All trees shall be pruned to remove dead, injured, and structurally poor branches (crossing branches, downward or inward facing limbs, competing leaders, etc.) while preserving the natural character of the tree. The main leader shall not be removed. All cuts shall be clean and flush with the outside of the branch collar leaving no stubs, in accordance with the current American National Standard

(ANSI) A300 Part 1 Tree Shrub, and Other Woody Plant Management – Standard Practices (Pruning).

- 13.3 All ties, nursery tape, and flagging tape shall be removed from the tree at this time. Only the plant species label shall remain.

## 14 Tree Installation

- 14.1 Trees shall be planted in the first available planting season following completion of the lot in a subdivision, or as specified in a planting contract, where CP801.01, drawings CPD801.01 - CPD801.04 and CP801.02 (as applicable) forms part of the Specification, or as directed by the City.
- 14.2 Trees shall be planted during periods of suitable weather, locally accepted practice and at a time specific to the recommended transplant season for the tree species or as determined by a planting contract. No tree planting shall take place after December 1<sup>st</sup>, or in frozen, snow-covered, or water-logged/saturated ground at any time.
- 14.3 To set a tree at the specified elevation (see CPD 801.01), all burlap (including trunk wrap), ropes, wires, etc. shall be removed from the tree trunk and top half of the root ball in order to expose the root flare and surface roots (see also 12.2 previously). Trees shall be set vertically plumb and in the center of the tree planting pit at an elevation so that the root flare and top surface roots are at, or a maximum of 50 mm above the finished grade of the undisturbed soil surface adjacent to the pit. Bare root trees shall be placed so that roots lie in their natural position with the root flare and top surface roots at or no more than 50mm above the finished grade the undisturbed soil surface adjacent to the pit. Trees planted below this elevation will not be accepted.
- 14.4 After correctly positioning the tree in the hole at the specified elevation and prior to backfilling, root balls contained in wire baskets shall have the top half of the wire basket and burlap wrap cut and removed (not bent or folded down and covered over). Removed burlap, trunk coverings and/or protection and the cut half of the wire basket shall be removed from the site, disposed of by the Contractor and not buried in the planting hole.
- 14.5 Approved topsoil for backfill shall be placed in layers (lifts) not exceeding 75-100 mm maximum in thickness. After the tamping of the first lift fertilizer shall be incorporated as detailed in 11.4 previously. Each subsequent lift shall be tamped down in such a manner that tree roots are not damaged, and the tree retains a vertical, plumb position. Particular care shall be taken to ensure that no air pockets remain under or around the roots. Prior to the final lift, the backfill soil mixture shall be thoroughly watered, and backfilling completed.



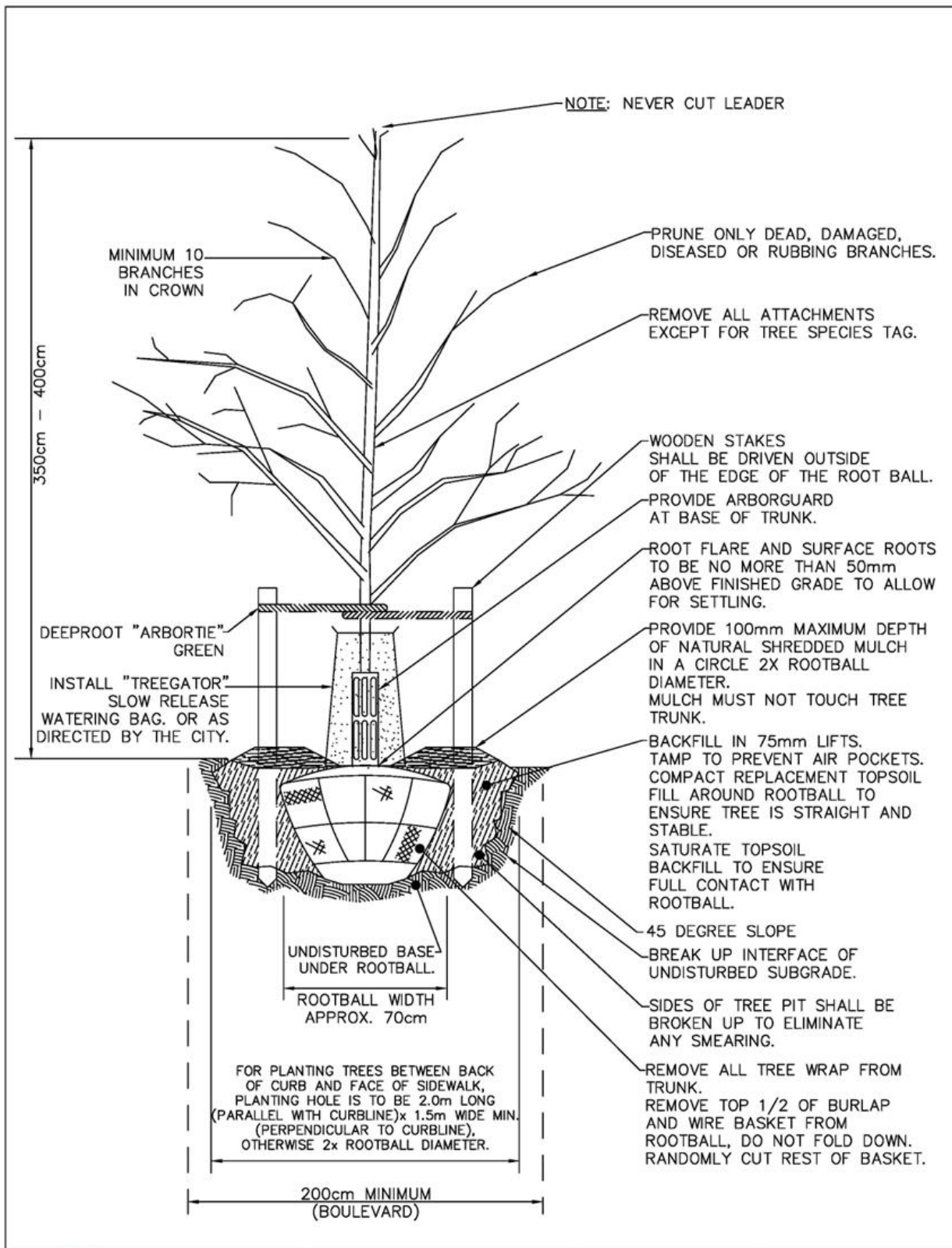
- 14.6 The tree planting pit shall have a 75mm surface lip constructed around the tree base on top of the landscape fabric with a diameter as large as the surface area of the excavated pit using backfill soil.
- 14.7 The mulch ring shall be filled with 100 mm settled depth of natural (not coloured), shredded bark mulch. Mulch shall not be placed against the tree trunk or root crown of the tree.
- 14.8 An ArborGuard tree protector shall be installed on the tree trunk base at the completion of mulching and in the correct direction.
- 14.9 Upon request from the City, the Contractor will provide a "Pull-and-Plant" service wherein a tree has failed in the last 3-5 years (5 cm DBH or less) and the Contractor will be responsible to remove and replaced the failed tree with a new tree. The wire basket may be intact underground, and a small stump may exist. All removed material must be removed from the site by the Contractor.
- 14.10 Upon request from the City, the Contractor will provide a "Relocation" service wherein a newly planted tree will be removed and replanted in another location. The new location may be at the same address or at a new address. The tree in question will be removed and replanted in the newly specified location. The remaining hole will be filled with back-fill, seeded with grass seed, and watered. All removed material must be removed from the site by the Contractor.
- 14.11 The Contractor will provide the ability to install trees via machine-dig or hand-dig. The Contractor may select their preferred method of installation but will be required to hand-dig if deemed necessary by site restrictions including locate validity.
- 14.12 Any location changes must be approved by City staff in writing prior to planting. Failure to do so may result in the relocation of the tree at the expense of the Contractor.
- 14.13 No trees shall be planted on private property. The Contractor shall follow the planting plans which include location information. If a tree is installed on private property, it must be relocated to City property at the expense of the Contractor.


## 15 Tree Support

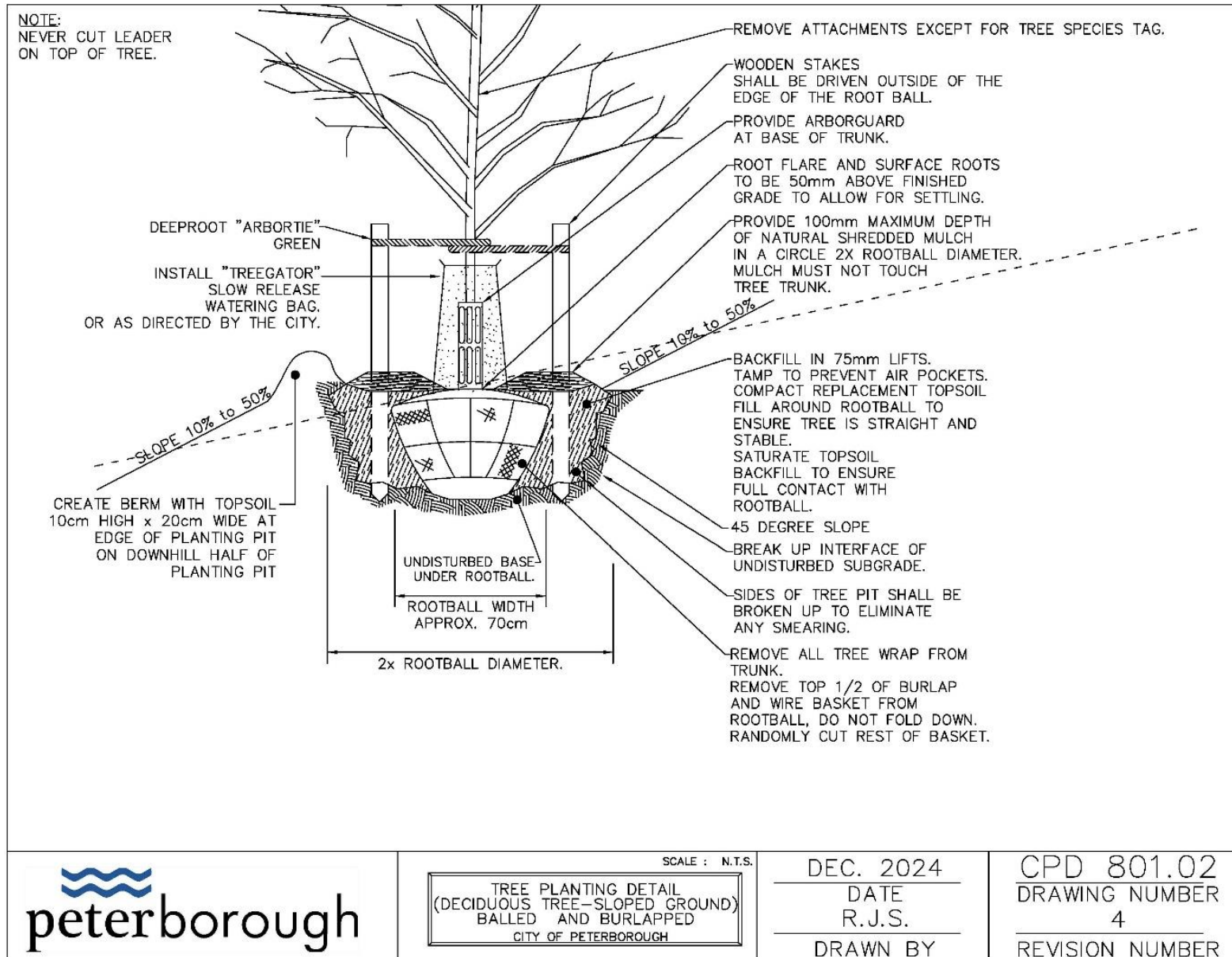
- 15.1 All trees shall be staked to promote root contact and anchorage in the tree planting pit and promote lateral root development. Two wooden stakes, 50 mm square, shall be securely driven into the ground (not through the root ball) with a minimum above ground height of 90 cm. Stakes shall be secured to the tree using deeprout ArborTie™ Green. Using a length of ArborTie™, create a figure-8 loop around the tree and fasten with a double knot at the stake in order to prevent girdling or by using the Arbor Tie Knot. The ArborTie™ will be secured to each wooden stake at an elevation from 70 – 80 cm or appropriately tied off to the stakes. Ties are not to be tied to the tree.
- 15.2 ArborTie™ and supporting stakes shall be removed one year following installation and disposed of by the Contractor.

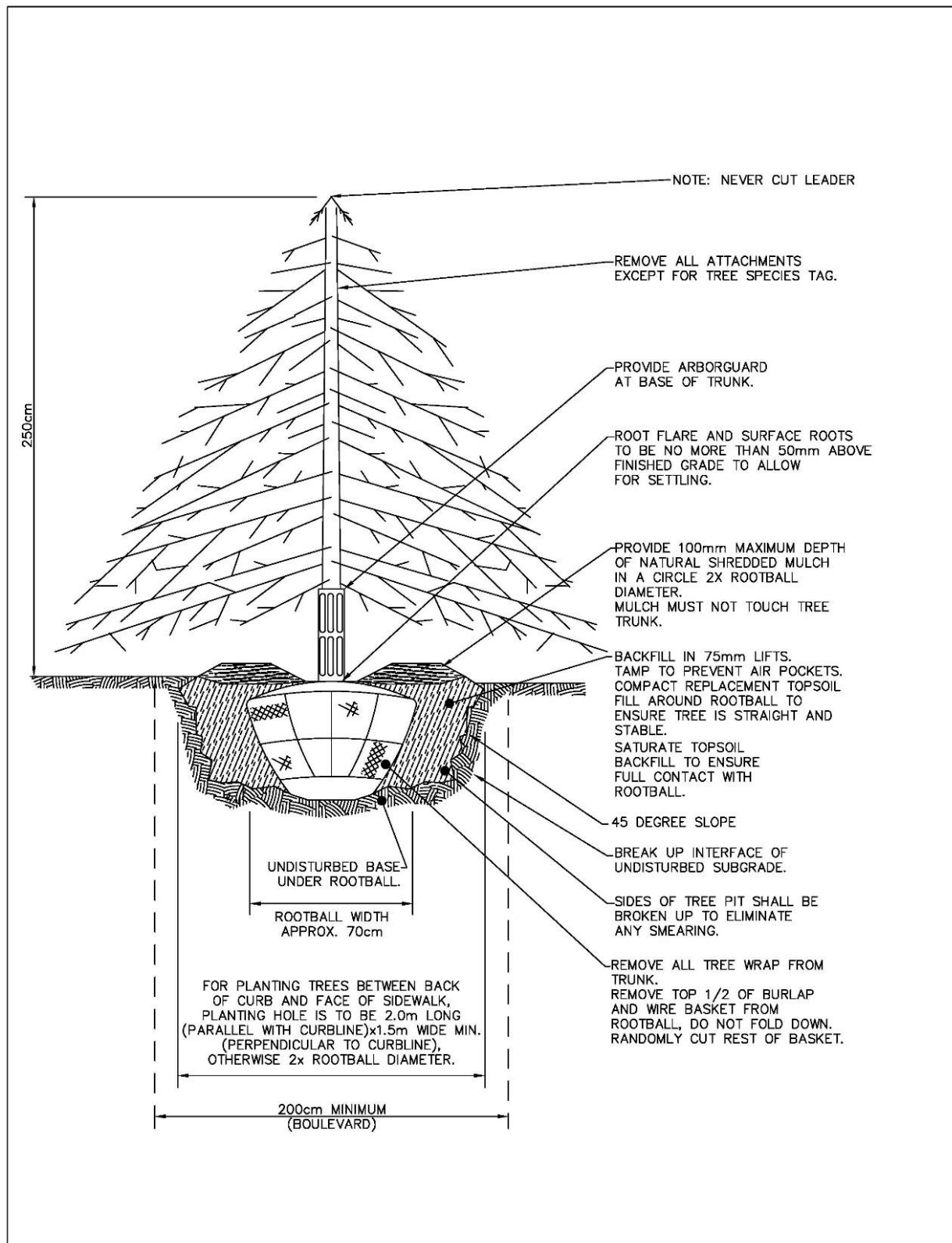
## 16 Restoration Planting


- 16.1 Restoration Planting shall be required where forest cover is to be restored.
- 16.2 All restoration planting shall consist of species listed within Table 4. Species Approved for Naturalization of CP 801.02 and shall be selected appropriately for the given soil, moisture, and light conditions of the site, as well as any specific stresses.
- 16.3 Restoration efforts within a woodland will achieve a minimum tree density of 1000 stems per hectare, in accordance with the definition of a Woodland as defined in the Forest Act. This density will be calculated using existing and proposed restoration planting.
- 16.4 A planting ratio of 40% caliper trees (40mm – 50mm) and 60% tree whips (1.0m – 2.0m in height) shall be provided, unless otherwise specified by the City.
- 16.5 A 2-year 80% survival warranty period shall apply to all restoration planting. During this time maintenance (i.e., weeding) of the planting area will be the responsibility of the Contractor.

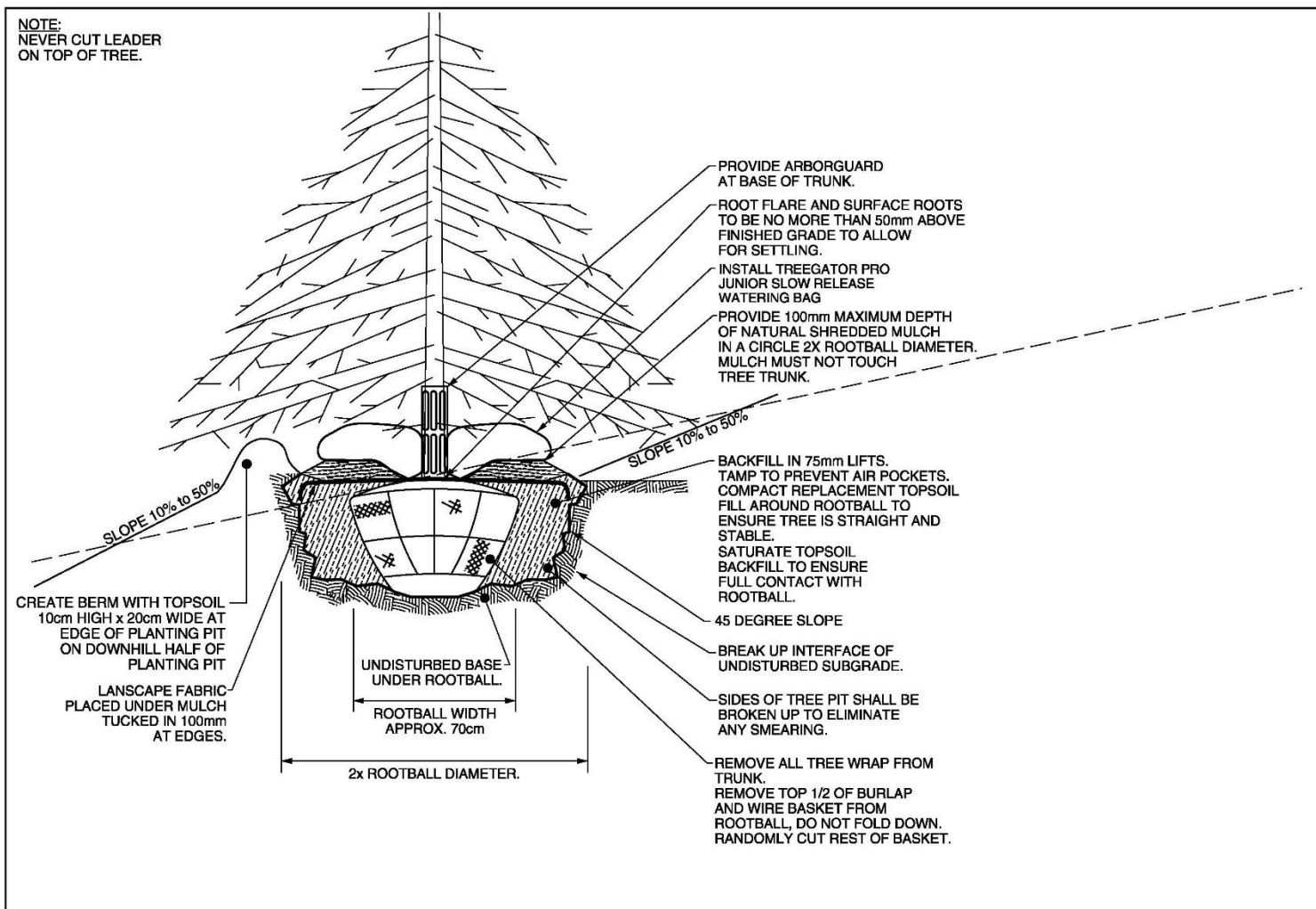



	<p>SCALE: N.T.S.</p> <p>TREE PLANTING DETAIL (DECIDUOUS TREE-LEVEL GROUND) BALLED AND BURLAPPED CITY OF PETERBOROUGH</p>	<p>DEC. 2024</p> <p>DATE</p> <p>R.J.S.</p>	<p>CPD 801.01</p> <p>DRAWING NUMBER</p> <p>6</p>
		<p>DRAWN BY</p>	<p>REVISION NUMBER</p>





	<p style="text-align: center;">SCALE : N.T.S.</p> <p style="text-align: center;">TREE PLANTING DETAIL (CONIFEROUS TREE-LEVEL GROUND) BALLED AND BURLAPPED CITY OF PETERBOROUGH</p>	<p>DEC. 2024 DATE R.J.S. DRAWN BY</p>	<p>CPD 801.03 DRAWING NUMBER 3 REVISION NUMBER</p>
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 <p>City of Peterborough</p>	<p>SCALE: N.T.S.</p> <p><b>TREE PLANTING DETAIL</b>  <b>(CONIFEROUS TREE-SLOPED GROUND)</b>  <b>BALLED AND BURLAPPED</b>          CITY OF PETERBOROUGH</p>	<p><b>JAN. 2018</b>          DATE  <b>R.J.S.</b>          DRAWN BY</p>	<p><b>CPD 801.04</b>          DRAWING NUMBER  <b>0</b>          REVISION NUMBER</p>
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## Recommended List for Street, Park and Site Plan Trees

## Specification CP 801.02

The City of Peterborough's recommended tree species list has been distributed into 4 tables. The first 3 tables list the species in average mature size classes (Small 0-8 m; Medium 9-15 m; Large 16 m+) and the final one lists the authorized species used for naturalization and reforestation purposes.

All trees in the **Small**, **Medium** and **Large** lists are authorized to be used in development projects, along streets and for park use, except for trees with the **S** and **P** signifiers.

The **S** signifier indicates that these trees are only authorized to be used as **Street** trees that are not close to greenspaces or naturalized areas as they have or may have invasive properties.

The **P** signifier indicates that these species may only be used in **Parks** and not be allowed to be used as a street tree.

The **U** and **M** signifiers indicate special considerations. **U** indicates that the tree is shade-tolerant and can usually be found in the **Understorey** in its natural habitat. The **M** signifier indicates that the tree may perform better in **Moist** environments.

Other cultivars of listed species below may be accepted.

**Table 1. Small Trees**

Botanical name	Common name	Native to North America	Salt Tolerance	Mature Height (m)	Mature Spread (m)	Acceptable Planting Locations
<i>Acer griseum</i>	Paperbark Maple	No	Medium	8	6	<b>S</b>
<i>Acer saccharum</i> 'Barrett Cole'	Apollo Sugar Maple	Yes	Low	8	3	
<i>Amelanchier laevis</i> 'Spring Flurry'	Smooth Serviceberry	Yes	Medium	8	6	
<i>Carpinus caroliniana</i>	Blue Beech	Yes	Low	8	8	<b>U</b>
<i>Cercis canadensis</i>	Eastern Redbud	Yes	Low	8	7	<b>U</b>
<i>Crataegus crus-galli</i> 'Inermis'	Thornless Cockspur Hawthorn	Yes	High	8	8	
<i>Maackia amurensis</i>	Amur Maackia	No	Low	8	6	<b>S</b>
<i>Sorbus x thuringiaca</i> 'Fastigiata'	Oakleaf Mountain Ash	No	Medium	9	6	<b>S</b>
<i>Syringa reticulata</i> 'Ivory silk'	Ivory Silk Japanese Tree lilac	No	Medium	7	5	<b>S</b>

Table 2. Medium Trees

Botanical name	Common name	Native to North America	Salt Tolerance	Mature Height (m)	Mature Spread (m)	Acceptable Planting Locations
<i>Acer campestre</i>	Hedge Maple	No	High	10	9	<b>S</b>
<i>Acer rubrum</i> 'Autumn Spire'	Autumn Spire Red Maple	Yes	Low	15	10	
<i>Acer rubrum</i> 'Frank Jr'	Redpointe Maple	Yes	Low	15	10	
<i>Aesculus x carnea</i> 'Briotii'	Ruby-Red Horsechestnut	No	Medium	10	12	
<i>Betula nigra</i>	River Birch	Yes	High	12	15	<b>P, M</b>
<i>Betula populifolia</i> 'Whitespire'	Whitespire Birch	Yes	Medium	10	7	
<i>Carpinus betulus</i> 'Fastigiata'	European Hornbeam	No	Low	12	6	<b>U</b>
<i>Catalpa speciosa</i>	Northern Catalpa	Yes	Medium	15	12	
<i>Celtis occidentalis</i> 'Chicagoland'	Chicagoland Hackberry	Yes	Medium	15	13	
<i>Cercidiphyllum japonicum</i>	Katsura	No	Medium	12	10	
<i>Cladrastis kentukea</i>	Yellowwood	Yes	Medium	12	13	
<i>Corylus colurna</i>	Turkish Hazel	No	Low	14	8	
<i>Ginkgo biloba</i> 'Princeton Sentry'	Princeton Sentry Ginkgo	No	High	13	5	
<i>Gleditsia triacanthos</i> 'Draves'	Street Keeper Honey Locust	Yes	High	15	7	
<i>Gleditsia triacanthos</i> 'Shademaster'	Shademaster Honey Locust	Yes	High	15	7	
<i>Liquidambar styraciflua</i> 'Moraine'	Moraine Sweetgum	Yes	Medium	13	8	<b>M</b>
<i>Nyssa sylvatica</i>	Black Gum	Yes	Medium	10	7	<b>M, U</b>
<i>Quercus bicolor</i>	Swamp White Oak	Yes	High	15	15	<b>M</b>
<i>Quercus coccinea</i>	Scarlet Oak	Yes	Medium	16	13	
<i>Quercus muehlenbergii</i>	Chinkapin Oak	Yes	Medium	15	15	
<i>Quercus robur</i>	English Oak	No	High	15	15	
<i>Quercus shumardii</i>	Shumard Oak	Yes	Medium	15	15	
<i>Sorbus americana</i>	American Mountain-Ash	Yes	Low	10	8	
<i>Sorbus aria</i> 'Lutescens'	Whitebeam	No	Medium	12	6	<b>S</b>
<i>Thuja occidentalis</i>	White Cedar	Yes	Medium	15	4	<b>P</b>



Table 3. Large Trees

Botanical name	Common name	Native to North America	Urban Tolerance	Mature Height (m)	Mature Spread (m)	Acceptable Planting Locations
<i>Abies concolor</i>	White Fir	No	Low	20	5	<b>P</b>
<i>Acer nigrum</i>	Black Maple	Yes	Medium	30	10	
<i>Acer rubrum</i>	Red Maple	Yes	Low	25	13	<b>M</b>
<i>Acer saccharinum</i> 'Silver Queen'	Silver Queen Silver Maple	Yes	Medium	16	12	<b>P</b>
<i>Acer saccharum</i>	Sugar Maple	Yes	Low	30	10	<b>U</b>
<i>Acer saccharum</i> 'Green Mountain'	Green Mountain Sugar Maple	Yes	Low	20	15	
<i>Acer x freemanii</i> 'Autumn Blaze'	Autumn Blaze Freeman Maple	Yes	Medium	16	12	
<i>Aesculus flava</i>	Yellow Buckeye	Yes	Medium	18	12	<b>P, U</b>
<i>Aesculus glabra</i>	Ohio Buckeye	Yes	High	20	15	<b>U</b>
<i>Aesculus hippocastanum</i>	Common Horsechestnut	No	Medium	18	16	<b>U</b>
<i>Betula papyrifera</i>	Paper Birch	Yes	Medium	17	10	<b>P</b>
<i>Carya cordiformis</i>	Bitternut Hickory	Yes	Medium	20	15	<b>P</b>
<i>Carya ovata</i>	Shagbark Hickory	Yes	High	20	15	<b>P</b>
<i>Fagus sylvatica</i>	European Beech	No	Low	15	10	
<i>Ginkgo biloba</i> 'Magyar'	Magyar Ginkgo	No	Medium	17	8	
<i>Gleditsia triacanthos</i> 'Skycole'	Skyline Honey Locust	Yes	High	16	10	
<i>Gymnocladus dioicus</i> 'Espresso'	Espresso Kentucky Coffeetree	Yes	High	16	11	
<i>Larix laricina</i>	Tamarack	Yes	Medium	20	9	<b>M</b>
<i>Liriodendron tulipifera</i>	Tulip Tree	Yes	High	25	15	
<i>Magnolia acuminata</i>	Cucumber Magnolia	Yes	Medium	25	10	
<i>Metasequoia glyptostroboides</i>	Dawn Redwood	No	Low	25	8	<b>P, M</b>
<i>Picea abies</i>	Norway Spruce	No	Medium	16	8	<b>P</b>
<i>Picea glauca</i>	White Spruce	Yes	Low	25	5	<b>P</b>
<i>Pinus strobus</i>	Eastern White Pine	Yes	Low	25	10	<b>P</b>
<i>Platanus x acerifolia</i> 'Bloodgood'	Bloodgood London Planetree	No	Medium	20	20	
<i>Platanus x acerifolia</i> 'Morton Circle'	Exclamation London Planetree	No	Medium	18	11	
<i>Platanus occidentalis</i>	Sycamore	Yes	Low	25	20	<b>P, M</b>
<i>Quercus alba</i>	White Oak	Yes	Medium	30	12	
<i>Quercus ellipsoidalis</i>	Northern Pin Oak	Yes	High	18	14	
<i>Quercus macrocarpa</i>	Bur Oak	Yes	High	20	20	<b>M</b>
<i>Quercus rubra</i>	Red Oak	Yes	High	18	16	
<i>Quercus velutina</i>	Black Oak	Yes	Low	17	15	
<i>Ulmus americana</i> 'Princeton'	Princeton Elm	Yes	High	25	15	
<i>Ulmus americana</i> 'Valley Forge'	Valley Forge Elm	Yes	High	21	20	
<i>Zelkova serrata</i>	Zelkova	No	High	20	12	<b>S</b>

**Table 4. Species Approved for Naturalization**

Botanical name	Common name	Native to North America	Urban Tolerance	Mature Height (m)	Mature Spread (m)	Acceptable Planting Locations
<i>Acer nigrum</i>	Black Maple	Yes	Medium	30	10	
<i>Acer rubrum</i>	Red Maple	Yes	Low	25	13	<b>M</b>
<i>Acer saccharinum</i>	Silver maple	Yes	Medium	16	12	
<i>Acer saccharum</i>	Sugar Maple	Yes	Low	30	10	
<i>Aesculus glabra</i>	Ohio Buckeye	Yes	High	20	15	<b>U</b>
<i>Amelanchier laevis</i>	Smooth Serviceberry	Yes	Medium	8	6	
<i>Betula allegheniensis</i>	Yellow Birch	Yes	Medium	20	10	<b>M</b>
<i>Betula nigra</i>	River Birch	Yes	High	12	15	<b>M</b>
<i>Betula papyrifera</i>	Paper Birch	Yes	Medium	17	10	
<i>Betula populifolia</i>	Grey Birch	Yes	Medium	10	7	
<i>Carpinus caroliniana</i>	Blue Beech	Yes	Low	8	8	<b>U</b>
<i>Carya cordiformis</i>	Bitternut Hickory	Yes	Medium	20	15	
<i>Carya ovata</i>	Shagbark Hickory	Yes	High	20	15	
<i>Catalpa speciosa</i>	Northern Catalpa	Yes	Medium	15	12	
<i>Celtis occidentalis</i>	Hackberry	Yes	Medium	15	13	
<i>Cercis canadensis</i>	Eastern Redbud	Yes	Low	8	7	
<i>Cornus alternifolia</i>	Alternate-Leaf Dogwood	Yes	Low	8	8	<b>U</b>
<i>Gleditsia triacanthos</i>	Honey Locust	Yes	High	16	10	
<i>Gymnocladus dioicus</i>	Espresso Kentucky Coffeetree	Yes	High	16	11	
<i>Juglans nigra</i>	Black Walnut	Yes	Low	18	18	
<i>Juniperus virginiana</i>	Eastern Redcedar	Yes	High	13	4	
<i>Larix laricina</i>	Tamarack	Yes	Medium	20	9	<b>M</b>
<i>Liquidambar styraciflua</i>	Moraine Sweetgum	Yes	Medium	13	8	
<i>Liriodendron tulipifera</i>	Tulip Tree	Yes	High	25	15	
<i>Magnolia acuminata</i>	Cucumber Magnolia	Yes	Medium	25	10	
<i>Nyssa sylvatica</i>	Black Gum	Yes	Medium	10	7	<b>M, U</b>
<i>Ostrya virginiana</i>	Ironwood	Yes	Low	12	8	<b>U</b>
<i>Picea glauca</i>	White Spruce	Yes	Low	25	5	<b>U</b>
<i>Pinus strobus</i>	Eastern White Pine	Yes	Low	25	10	
<i>Platanus occidentalis</i>	Sycamore	Yes	Low	25	20	<b>M</b>
<i>Populus deltoides</i>	Eastern Cottonwood	Yes	Medium	30	12	
<i>Populus grandidentata</i>	Large-Tooth Aspen	Yes	Medium	20	15	
<i>Populus tremuloides</i>	Trembling Aspen	Yes	Medium	15	7	
<i>Ptelea trifoliata</i>	Common Hoptree	Yes	Medium	6	6	<b>U</b>
<i>Quercus alba</i>	White Oak	Yes	Medium	30	12	
<i>Quercus bicolor</i>	Swamp White Oak	Yes	High	15	15	<b>M</b>

<i>Quercus coccinea</i>	Scarlet Oak	Yes	Medium	16	13	
<i>Quercus ellipsoidalis</i>	Northern Pin Oak	Yes	High	18	14	
<i>Quercus macrocarpa</i>	Bur Oak	Yes	High	20	20	<b>M</b>
<i>Quercus muehlenbergii</i>	Chinkapin Oak	Yes	Medium	15	15	
<i>Quercus rubra</i>	Red Oak	Yes	High	18	16	
<i>Quercus shumardii</i>	Shumard Oak	Yes	Medium	15	15	
<i>Quercus velutina</i>	Black Oak	Yes	Low	17	15	
<i>Sorbus americana</i>	American Mountain-Ash	Yes	Low	10	8	
<i>Thuja occidentalis</i>	White Cedar	Yes	Medium	15	4	<b>U</b>
<i>Tilia americana</i>	Basswood	Yes	Low	17	10	<b>U</b>
<i>Tsuga canadensis</i>	Eastern Hemlock	Yes	Low	16	9	<b>M, U</b>
<i>Ulmus americana</i>	White Elm	Yes	High	25	15	