Tree Pruning Guidelines

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Purpose

This document outlines the objectives, methods and guidelines for pruning trees on the City right-of-way and in City parkland.

Scope

The pruning guidelines outlined in this document provide staff with direction on the implementation of the Tree Pruning Policy. This policy applies to trees located on City streets, in City parkland, and privately-owned trees adversely affecting City streets or City parkland. Pruning includes removing dead, dying, diseased, decayed and damaged branches from the crowns of trees, providing clearance from the right of way, infrastructure and buildings, and improving the structure of trees to enhance health and stability.

Objectives

According to the Tree Pruning Policy, pruning is carried out in accordance with arboricultural best practices to meet the following objectives:

- To encourage the health of a tree
- To clear tree branches interfering with structures, street lighting, pedestrian and vehicular traffic, utility conductors and traffic signals or signs.
- To encourage the natural form of the tree species
- To remove dead limbs
- To maintain structural stability and balance of a tree

Definitions

Clearance Pruning is a pruning technique that reduces or removes branches that interfere with any part of an adjacent structure or its immediate attachment(s). Clearance objectives should be met using reduction cuts rather than removal cuts wherever possible. Small diameter cuts are preferred over fewer, larger diameter cuts to minimize stress on the tree[1]. Clearance pruning should be done in conjunction with **Directional Pruning** to direct branches away from adjacent obstructions to minimize future pruning requirements.

Crown Reduction is a pruning technique used to maintain the structural integrity of trees and to minimize the risk of potential branch failure. It involves the pruning back of branches and/or limbs to lateral branches that are at least 1/3 the size of the parent limb. This technique typically results in an overall reduction of the tree's crown size to reduce wind-loading on the

[1] ANSI A300 – 2023 Tree Care Standards 5.5.1.1

outer crown. In some cases, this technique may also target the reduction of an individual over-extended limb that protrudes beyond the normal crown shape. Removal of a significant portion of the overall canopy within a single growing season should be avoided, with preference given to measured, linear reductions implemented over multiple growing seasons. The risk of storm damage can be significantly reduced by lowering the center of gravity on long branches to reduce lever forces. However, interior and lower branches should be retained, with the majority of cuts made in the outer crown.

Crown Restoration is a pruning technique used to restore the structural integrity and botanical health of a tree that has suffered the loss of major limbs or extensive live foliage through storm damage, mechanical injury or improper pruning. For example, in the event of storm damage, the crown may be “heavy” on one side and require balancing to reduce potential risk of branch failure. This objective should be accomplished using reduction cuts in the outer crown to reduce wind-loading on over-extended limbs, while retaining interior branch density to promote healthy continued growth[2]. Work orders prescribing this technique should be detailed and specific about where to make pruning cuts. In some situations, it is preferable to carry out this work over multiple growing seasons when a substantial amount of live growth requires reduction. The rationale for a multi-year approach to restoring or rebalancing a tree should be clearly specified in work order log notes.

Dead wooding is a pruning technique that entails the removal of dead, dying, damaged and/or diseased branches from the crown of the tree. Dead wooding removes possible food sources for damaging pests, limits diseases and enhances the overall health and safety of the tree.

Directional Pruning is a reduction-based pruning technique that selectively shortens or removes branches to redirect current and future growth away from infrastructure, with the primary objective of safety and reliable clearance around utilities, buildings, and roadways. This is particularly important for juvenile trees in a stage of rapid growth after establishment where trunk diameter typically ranges between 10cm and 25cm. This is an optimal stage of growth where good branching structure and favorable directional growth can be formed through careful selective pruning.

Retrenchment Pruning is a form of crown reduction pruning used to preserve mature and veteran trees by mimicking the natural process of retrenchment, where the outer crown of older trees starts to die back to ‘shrink’ the crown to a more durable and sustainable size. For mature and veteran trees that are already in a state of natural retrenchment, this technique

[2] ANSI A300 – 2023 Tree Care Standards 5.5.7

includes removing dead branches in the outer crown and lightly reducing the overall crown for structural resilience. Work orders prescribing this technique should be detailed and specific about where to make pruning cuts, to ensure as much live foliage is preserved as possible. It is critical to preserve interior or lower branches, including epicormic branches to preserve health and vigor. Retrenchment pruning typically requires a multi-year plan to monitor health and structure and to repeat this technique in small pruning doses as prescribed by an Arborist Inspector.

Structural Pruning is a pruning technique that proactively and gradually trains and establishes proper branching structure throughout a tree's crown. It uses a combination of pruning techniques to selectively reduce (subordinate), redirect/train and gradually remove limbs and foliage to enhance tree vitality. Structural pruning is typically done on younger trees when it is most effective but can be applied to intermediate aged and mature trees as well. When structural pruning is executed properly, it is proven to effectively reduce future branch and whole tree failures as well as future maintenance costs.

Root Pruning is the pruning of roots back to lateral roots to prevent root injury from construction/trenching activities within the root zone of the tree. Root pruning is also the process of pre-digging a root ball to increase the density of root development for transplanting.

Traffic Sign/Signal Clearance involves pruning and/or removing limbs and/or foliage to maintain proper sight lines for vehicles and/or pedestrians, approaching traffic signals or signs.

Guidelines

A. General Guidelines Before Starting Work

All staff shall inspect tree(s) for structural defects and/or any other characteristics related to the assigned work that may place the public, property, or the tree at risk prior to performing any work. Where hazardous trees are identified, staff shall immediately bring them to the attention of the Forestry Foreperson and follow direction received.

If staff observe that the condition of the tree(s) has changed from the prescribed work and now requires an alternate work activity – for example, a tree was scheduled for pruning but has since died and now requires removal – staff shall immediately inform the Forestry Foreperson before proceeding and follow direction received.

If staff observe that a tree has been previously pruned by unknown persons, such as a private arborist hired by the adjacent property owner, a Toronto Hydro contractor, or another crew that may have worked on the tree in error, staff shall immediately inform the Forestry Foreperson and follow direction received

B. General Pruning Guidelines

All work shall be carried out using proper arboriculture practices, in alignment with the *American National Standard Institute Standard Pruning Practices (ANSI) A300 2023*, an internationally recognized standard.

Pruning must not be carried out to improve scenic views; to obtain uninterrupted paths for telecommunication signals; to clear for store signs or security cameras; nor to increase light to swimming pools, solar panels, patios, lawns or gardens. In these cases, a permit to remove or injure trees in accordance with *Municipal Code, Chapter 813, Trees, Article II*, is required.

The following general pruning guidelines shall be followed:

- Prune trees for deadwood and interfering limbs.
- Elevate trees over major arterial roads, and where required, provide 4.5 m clearance for public transportation vehicles.
- Prune trees to elevate low limbs over all other roadways to provide a clearance of 3 m to 4 m, enough to provide clearance for trucks on the street side.
- Elevate trees over driveways and sidewalks to provide a clearance of 2.5 m to 3 m.
- Elevate trees to approximately 2 m over maintained softscape areas, with consideration for site and species factors, such as access requirements for lawn and garden maintenance, privacy screening on front lawns, and the natural form of the tree (e.g. conifer trees are often maintained with branches touching the ground).
- Prune trees away from structures (buildings, homes) to a distance of 2 m to 3 m.
- Prune trees to clear stop signs, traffic regulatory signs, traffic signals and street lighting to provide a clearance of 0.5 m to 1 m. Traffic signals should have a minimum of 30 m of unimpeded view for approaching vehicles.
- Prune trees to maintain an unobstructed 2 m radius around fire hydrants.
- Remove no more than 20 per cent of foliage within one growing season.
- Adjust the percentage and distribution of branches and foliage to be removed according to the tree species, age, health, location and specific instructions within the work order. Faster growing species may be pruned to the higher value in the ranges provided.
- Prune to meet clearances while balancing considerations for tree health. For example, a young tree may have low branches growing towards a roadway or sidewalk that will eventually be removed to meet clearances but can be gradually reduced over multiple growing seasons to retain beneficial foliage and help build trunk taper.

C. Guidelines for Pruning Juvenile Trees

After newly planted trees establish self-sustaining root systems, they move into a juvenile stage of growth characterized by rapid growth and flexible branches. This stage is the most critical for structural pruning to establish a strong, dominant central leader and well-spaced permanent branches, ensuring long-term health and stability.

Fast-growing species can have a short juvenile stage, while slow-growing, shade-tolerant species can remain in the juvenile stage for a long time. Generally, trees that range from 4-15 years old or are under 25 cm DBH can be considered juvenile trees.

The primary objective of pruning juvenile trees is to establish a strong and sustainable branch structure that will support the tree throughout its life. This begins by selecting and promoting a central leader to maintain apical dominance. Competing leaders should be lightly reduced rather than removed, and foliage on the chosen leader should remain intact whenever possible. If interfering branches are present, reduce them rather than remove them completely to minimize stress on the tree. Formative pruning focuses on two crown zones: **temporary branches** and **permanent branches**.

Temporary branches, located below the desired clearance height, can be retained in the short-term because they help build strong trunk taper while providing beneficial photosynthates to the young tree, but should be reduced to encourage growth to permanent scaffold branches. Temporary branches in the lower crown can be pruned lightly to achieve clearances, but the health of the tree should be considered in relation to the clearance objectives. The best time to remove temporary branches completely will depend on the size and vigor of the tree. They should be removed before the branches become large to minimize the size of the pruning cuts and encourage compartmentalization.

Permanent branches, situated above the clearance height, will form the future crown. Pruning in this zone aims to develop a stable crown architecture that aligns with the species' natural form. This is achieved by selecting a dominant leader and primary scaffold branches, and reducing codominant, competing or interfering branches using reduction cuts. While some co-dominance may be acceptable depending on species and site conditions, in most cases the dominant leader at the crown's top should be retained and never reduced.

Directional pruning during these early stages promotes structurally sound trees that are well suited to their environment while providing adequate clearance from future conflicts as they mature. Elevating the crown in young trees may require multiple pruning cycles over several years.

When pruning, consider species characteristics and tree health to determine the appropriate

level of intervention. Do not remove more live foliage than is necessary to meet pruning objectives, with a general rule that no more than 20 per cent of foliage should be removed in a single growing season, a percentage which may vary depending on age, species, location and health factors. The primary aim is to establish permanent branches, encourage strong structural development, reduce present and future risks, and guide growth to best suit the tree's environment.

The following pruning guidelines for juvenile trees shall be followed:

- Remove dead, dying, diseased, broken or damaged branches.
- Prune to maintain dominant stem based on species and growth habits, by reducing codominant or competing stems.
- Establish the lowest permanent branches and appropriate spacing of scaffold branches.
- Raise up crown lightly or reduce some of the temporary branches to allow for required clearances. Reduce branches to where the clearances are met, and the remaining branch and foliage are no longer in conflict.
- Consider the health of the tree in relation to the clearance requirements – for example, prune to the lower end of a clearance range if achieving full clearance would be detrimental to the health of the tree.
- Choose the right time to remove versus reduce temporary branches – remove when the tree is vigorous enough to sustain the loss of these branches, but before the branches become so large that pruning cuts are susceptible to decay.
- Do not remove more than 20 per cent of the foliage within one growing season to avoid stress and ensure continued healthy growth.
- Where possible remove branches with tight angles at the stem (<45° or "V" attachment) or reduce gradually to avoid the development of poor or structurally weak branch unions as the tree matures.
- Reduce or remove interfering branches (crossing or rubbing) that are causing or will cause mechanical damage to stem(s) or permanent branches.
- Begin forming permanent crown by directional pruning crown away from nearby structures, obstacles and electrical infrastructure to guide the tree's growth to best suit its environment.
- Avoid removing epicormic branches unless necessary to meet clearance objectives. Epicormic branches are a sign of stress but can be beneficial to a tree as a coping mechanism. Where epicormic branches are growing in clusters, selectively retaining

some branches while removing or reducing others promotes strong branch attachments over time.

- Preserve internal growth whenever possible, and when not in conflict with other stems and branches.

D. Pruning Restrictions

Pruning of oak and elm trees is prohibited between April 1 and October 31 to prevent the spread of disease in accordance with Canadian Food Inspection Agency (CFIA) guidelines. There are unique circumstances which may require tree maintenance work to take place during prohibited times, such as storm or hazard situations. If pruning of an oak or elm tree must occur during prohibited months, all work must be approved by a City of Toronto Urban Forestry Representative. All standard arboricultural best management practices must be followed as prescribed and directed, including painting a thin layer of wound paint or shellac to the wound immediately following pruning, and sterilizing tools after pruning individual trees.

Diameter Limit for Healthy Branches

Removing large diameter branches has a detrimental effect on the health and structural integrity of trees. Unless specified in a work order with detailed instructions and/or a marked photo, healthy branches >15cm in diameter must not be removed without approval from a Forestry Foreperson. This does not apply to dead branches, hangers or branches with recent, major splits and/or cracks compromising structure.

Utility Line Clearing

Utility line clearing is the process by which branches interfering with utility conductors and infrastructure are directionally cut back to provide acceptable clearances to avoid potential damage to utility infrastructure; ensure safety and protection of property; and provide reliable services to utility customers. Utility line clearing is not the same as tree pruning as its purpose is to clear branches away from utility infrastructure. Utility infrastructure includes hydro-electric and telecommunications lines.

Toronto Hydro (also known as Toronto Hydro Electric Service or THES) is a holding company of the City of Toronto that is incorporated under the authority of the Ontario Electricity Act, 1998. Toronto Hydro performs utility line clearing in accordance with that legislation.

In instances where the City of Toronto undertakes utility line clearing on hydro-electric infrastructure, the following utility clearances are used:

Wire Construction and Voltage Class	Clearance Zone: Vertical above Conductor (m)	Clearance Zone Horizontal outside Conductor (m)	Clearance Zone Vertical below Conductor (m)
Bare and insulated secondary lines and house service lines <750 V Includes weatherproof coated and Multiplex coated	0.30 m	0.30 m	0.30 m
Bare wire 4000 V- 27,600 V (4 kV – 27.6 kV)	1.6 m	1.2 m	1.2 m
Insulated wire (i.e. Hendrix coated) 4000 V- 27,600 V (4 kV – 27.6 kV)	1.0 m	1.0 m	1.0 m
TTC Overhead Contact Wires (600V DC)	1.0m	1.0m	1.0m

Authority

City of Toronto Municipal Code Chapter 813, Trees