Tree Protection Guide

County of Brant, Planning Division
519.44BRANT (519.442.7268) | planning@brant.ca

brant.ca/planning

brant.ca/trees

Table of Contents

Introduction

Trees regulate temperature, absorb C02, beautify our parks, provide wildlife habitat, increase property values, contribute to walkable neighbourhoods, and clean our water. These benefits become more prominent when a tree reaches maturity. Tree protection in the early stages of construction planning helps save both trees and property from potential damage.

The County of Brant's Tree Protection Guide is intended to provide guidance, advice and direction for landowners and developers who are performing construction or development near trees and to provide an outline of considerations when preparing a Tree Protection Plan to be submitted to the County for proposed development.

This document outlines tree protection requirements for all County or private trees of any size that are on or adjacent to lands subject to development or construction. Trees that are adjacent to a proposed site and have a Tree Protection Zone (TPZ) that falls within or in close proximity to the proposed work area must be included and considered for protection.

This Guide promotes adequate care when digging or working around trees to ensure the ongoing health of trees and reduce risk of damage during the works. These are a combination of standards and best management practices from the County of Brant, other major municipalities, and jurisdictions. Requirements for tree protection may include an Arborist Report, a Tree Protection Plan, identification of Tree Protection Zones, installation of tree protection barriers, pruning of branches and roots, and remediation measures to mitigate the impact of damage. Increased tree protection measures or further studies may be required by the County staff, as required.

Types of Tree Damage

There are many impacts from construction and development that may cause permanent negative damage to trees within the construction zone, along staging and lay-down areas and construction access routes. Considerations for activities that could cause these types of damages are identified in this section.

1. **Construction machinery** can cause physical injury to the roots, trunk and crown of a tree when they are operated near a tree.
2. **Poor pruning practices** may also result in tree injury. Broken branches, trunk wounds, or other physical wounds are permanent and may be fatal to the tree.
3. **Root cutting from excavation** can occur when digging within the dripline of the tree. Root cutting can significantly impact the health and stability of a tree. Most tree roots are found in the upper 30 to 60 cm of soil. If anchorage roots over 10cm in diameter are damaged the tree may become destabilized and fall over. If cutting tree roots is unavoidable, a certified arborist must approve and oversee the root cutting. Fibrous roots, which are responsible for the uptake of nutrients and water, found in the top 30 cm of soil, are easily severed during construction. Hand digging, low pressure hydro-vac, or air spade exploratory digging will aid in determining the extent of the root system and what steps will need to be taken to minimize impacts.
4. **Soil compaction** happens when storage of materials or operation of vehicles or machinery cross over the rooting area, especially when the soil is wet, and is one of the leading causes of tree decline. Compaction reduces pore space in the soil which contains the water and air necessary for tree growth. This reduces soil function with the potential to cause a decline in the health of the tree, killing off many of the feeder roots which sustain the tree.

Tree Protection Plan Requirements

A Tree Protection Plan (TPP) is required to be completed by a Qualified Person and submitted to the municipality for the review and approval by Forestry staff at the County of Brant prior to the start of construction or other works.

The TPP should include, but is not limited to:

- Arborist Report
- A Complete Tree Inventory
- Tree Protection Plan on a current property survey

Arborist Report

The Arborist Report must contain the following components and be formatted as a PDF:

- **Title page** including:
  - Property Address
  - Applicant's Name
  - Author's Name, Title, Qualifications and Company Name
  - Date
- **Scope of Project** including:
  - Project type
  - Number of trees on property and number of trees affected by project
- **Comments** including:
  - Site condition and tree condition in general
  - Mitigation and preservation procedures such as compaction alleviation techniques or root exploration and pruning methods
  - Proposed tree work requirements
  - Any flora or fauna species at risk observed, such as Butternut or Redheaded Woodpecker, or lack thereof
- **Summary and Conclusion** including
  - Number of trees removed and/or affected by project
  - Signed letter of consent by both owners for any shared trees to be removed

Tree Inventory and Protection Plan

Tree Inventory for each tree must contain the following components and be formatted as a PDF:

A document showing:

- Species Name in both common and botanical forms
- Size (dbh 1.4m above ground)

- Size of TPZ (Tree Protection Zone in meters)
- Ownership (e.g., private, neighbour, city, shared)
- Health, Structure, and Overall Condition (ratings to be used: Good, Fair, Poor, and Dead)
- Retain or Remove
- Site Comments (e.g., cavity, pests and diseases, hanger)
- Preservation Comments (e.g. root exploration and pruning using Air Spade or hydro vac, etc.)
- Future tree management or monitoring recommendations

A map showing:

- All inventoried trees, numbered on plan with a unique identifier that must correspond with the tree inventory
- All removals to be marked with a X or by colour clearly identified on the plan
- All TPZ noted along with minimum distances measured from the outside edge of trunk
- Any additional ground protection that is required
- Designated travel corridors and storage compounds, portable rooms/buildings, and any other facilities for on-site work for both workers and equipment
- Existing structures or grade changes
- Legend
- Entire plan must be overlaid on a current survey or recent aerial photograph with proposed project shown for reference.

Determining Tree Protection Minimum Distances

Measuring Diameter at Breast Height

Diameter at breast height must be measured at 1.4m from the ground using a calibrated tool such as a caliper, diameter tape or a tool designed to measure diameter.

Minimum Tree Protection Zones

Once the diameter is determined the following table must be used to determine the Tree Protection Zone. Barriers will not be placed within the TPZ rather on the outside of the predetermined area.

These minimum distances provide the minimum protection for anchor and traverse roots; however, there can still be significant damage to lateral

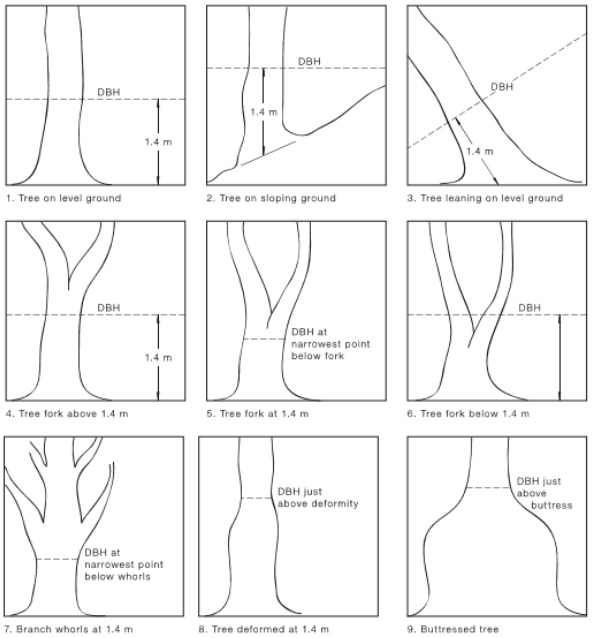

Figure 1: How to measure your tree

roots which are important for the trees biological function. For this reason, The County may require or reserves the right for larger tree protection zones than the minimum.

Trunk Diameter (DBH)	Minimum Protection Distances Required County- owned Trees	Minimum Protection Distances Required for Areas Designated Open Space or Woodlands
	Whichever of the two is greater:	Whichever of the two is greater:
< 10cm	The drip line or 1.2 m	The drip line or 1.2 m
10-29 cm	The drip line or 1.8 m	The drip line or 3.6 m
30-40 cm	The drip line or 2.4 m	The drip line or 4.8 m
41-50 cm	The drip line or 3.0 m	The drip line or 6.0 m
51-60 cm	The drip line or 3.6 m	The drip line or 7.2 m
61-70 cm	The drip line or 4.2 m	The drip line or 8.4 m
71-80 cm	The drip line or 4.8 m	The drip line or 9.6 m
81-90 cm	5.4 m	The drip line or 10.8 m
91-100 cm	6.0 m	The drip line or 12.0 m
>100 cm	**6 cm protection for each 1 cm diameter**	**12 cm protection for each 1 cm diameter or the drip line**

An exception to the minimum distance of the TPZ may be granted when the tree is flanked by a curb, sidewalk, and or asphalt road. In such cases the barrier may be limited to the furthest extent of the grassed boulevard area however root pruning using approved methods must be incorporated to reduce impacts on tree roots due to ripping or tearing of roots. Hand digging, low pressure hydro-vac or air spades may be used to uncover roots for pruning or avoidance by an arborist and roots may be pruned to a depth which will meet the construction requirements. This operation is only to be done with the approval of the County. Roots that are exposed should be covered with wet burlap or soil as soon as possible and watered regularly to prevent them from drying out.

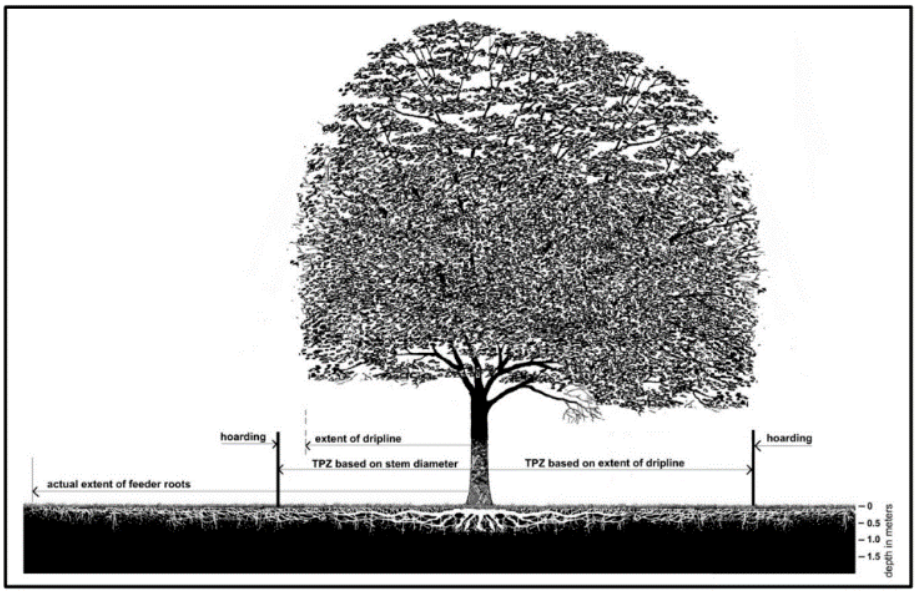

Figure 2: Minimum Tree Protection Zone (TPZ) Determination

Tree Protection Barriers, Construction, and Signage

Tree Protection Barriers

All barriers must be erected, secure, and complete with signage posted prior to any demolition, construction, or other works. Materials must comply with all barrier specifications, as well as all supports, and bracing used to secure the barrier should be located outside the TPZ. All supports and bracing shall be located as to minimize damage to roots. Tree protection barriers may be inspected by County staff to ensure they have been installed correctly and remain in place throughout all construction and development activities.

Barrier Specifications

- Height shall be 1.2 m (4'), visibility on boulevards must be maintained
- T-Bar Posts are to be used for support
- 2"x4"s are to be used for top rails
- Spacing between vertical posts to be no further apart than 2.4 m (8')
- Structure must be sturdy with posts driven firmly into the ground
- Continuous plastic mesh screening (e.g. orange snow fencing) is to be used
- Signage must be posted, sign must be a minimum of 40cm x 60cm and waterproof
- Where some fill has to be temporarily located near tree protection barrier, plywood must be used to ensure no material enters the Tree Protection Zone
- In addition to tree protection fencing, sediment fencing might be required, this will be determined in the Tree Protection Plan by a qualified person

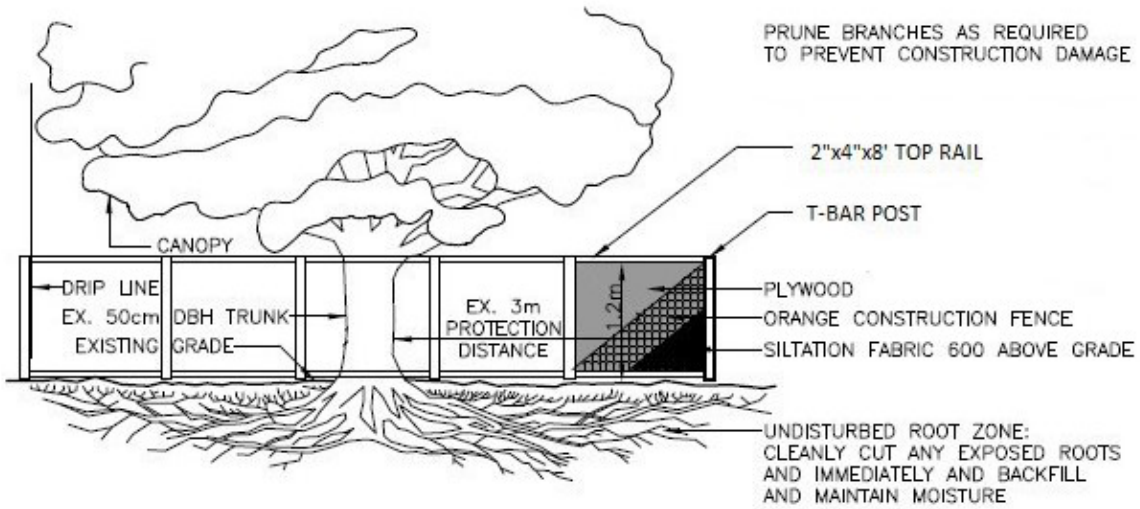

Figure 3: Pruning branches to prevent construction damage

Tree Protection Signage

Tree protection signs are to be 16 inches by 24 inches (40.64 cm by 60.96 cm) and are to be on a waterproof material. Installation of the signs is mandatory, and all associated costs of the signage are the sole responsibility of the applicant. No other signage is permitted to be fixed onto any tree protection hoarding.

TREE PROTECTION ZONE

No grade change, storage of materials or equipment is permitted within this Tree Protection Zone (TPZ). Tree protection barriers must not be moved or altered without written authorization from the County of Brant.

For more information, please contact the County of Brant Forestry Technician at forestry@brant.ca

Prohibited Activities Within Tree Protection Zones

Except where authorized by Forestry staff from the County of Brant, the following activities are prohibited within the TPZ:

- Construction of any kind
- Altering of grade by adding fill, excavating, trenching, scraping, dumping or disturbance of any kind
- Storage of construction materials, equipment, soil, construction waste or debris wash facilities, portable rooms/buildings
- Disposal of any liquids e.g. concrete sleuth, gas, oil, paint, etc.
- Movement of vehicles, equipment or pedestrians
- Parking or storage of vehicles or machinery
- Directional micro-tunneling, boring, and other activities may be permitted within the limits of the TPZ subject to approval from the County

Onsite Arborist Requirements

Whenever work is required within the Tree Protection Zone an arborist must be present and either performing or supervising the work at hand. Below are the qualifications required to be recognized as a certified arborist by the County of Brant:

- Have a current certification in good standing from the International Society of Arboriculture, Certified Arborist or Board-Certified Master Arborist; or,
- Have completed an apprenticeship in Arboriculture and completed the required hours/written exam to be a Qualified Arborist in the eyes of the Ontario Provincial Government; or,
- Have completed the qualifications and are a Registered Professional Forester (RPF); or,
- Have the verifiable skills and experience to perform or supervise said work within the Tree Protection Zone

Definitions

AIR SPADE / AIR KNIFE - is a specialist excavation tool that uses compressed air to remove and break up soil with minimal damage to roots and underground utilities. It can be used for a variety of reasons including the alleviation of compaction, soil improvement, root inspection and root location.

ARBORIST - is an individual trained in the art and science of planting, caring for, and maintaining individual trees.

CAD (computer-aided design) - software used by architects, engineers, drafters, artists, and others to create precision drawings or technical illustrations.

COMPACTION - process by which the porosity of a given form of sediment is decreased as a result of its mineral grains being squeezed together by the weight of overlying sediment or by mechanical means.

THE COUNTY – Means the County of Brant.

DBH – diameter at breast height a measurement taken at 1.4 meters from the ground.

DEVELOPMENT APPLICATION - is a formal request for consent to carry out proposed development, such as change of use of land, subdivide land, and carry out building, landscaping and other work.

DIRECTIONAL BORING - commonly called horizontal directional drilling or HDD, is a steerable trenchless method of installing underground pipe, conduit, or cable in a shallow arc along a prescribed bore path by using a surface-launched drilling rig, with minimal impact on the surrounding area.

DRY VAC / HYDRO VAC - is a type of tank truck that has a pump and a tank, designed to pneumatically suck liquids, sludge (such as fecal sludge), slurries or sand/water mixtures without the contact of any mechanical equipment.

MITIGATION - Includes the prevention, modification or alleviation of impacts on the natural environment. Also includes any action with the intent to enhance beneficial

effects.

PDF - an abbreviation for the Netware Printer Definition File. PDF (Portable Document Format) is a file format that has captured all the elements of a printed document as an electronic image that you can view, navigate, print, or forward to someone else.

QUALIFIED PERSON – An ISA Certified Arborist / ISA Board-Certified Master Arborist / Ontario Qualified Arborist / Registered Professional Forester / verifiable skills and experience in arboriculture.

TREE PROTECTION ZONE (TPZ) - is the minimum setback required to maintain the structural integrity of the tree's anchor roots, based on generally accepted arboricultural principles.