TREE PROTECTION POLICY AND SPECIFICATIONS FOR CONSTRUCTION NEAR TREES

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1. Introduction

The maintenance and enhancement of the urban forest is one of our goals. Preserving and protecting **healthy** trees is one objective towards achieving this goal. Including trees in the initial stages of construction planning may mean the difference between preserving a healthy tree or having to remove it. When plans are created with tree preservation in mind, you can help us protect our existing tree resource.

The tree protection policies and specifications outlined below reflect the policy of Toronto City Council. Anyone failing to adhere to the tree protection policies and specifications will be financially responsible for any resulting damage to trees and may be charged under the provisions of the applicable City of Toronto tree by-law.

Prior to commencing with any construction activity on your property it is important that you consult with a tree care professional to determine the type and condition of the trees on your property and surrounding properties and to become aware of the tree protection by-laws that could impact your proposal.

All trees situated on City streets are protected under Article II, Chapter 813 of the City of Toronto Municipal Code. For more information visit our website at www.toronto.ca/trees/city_trees.htm.

Trees on private property are protected under Article III, Chapter 813 of the City of Toronto Municipal Code. Privately-owned trees that do not qualify for protection under the private tree legislation, because they have a diameter less than 30 cm, must be protected if they were planted as a condition of site plan approval and incorporated into a site plan agreement which was registered on title. Trees in this category are required to be maintained substantially in conformity with the approved drawings. For more information visit our website at www.toronto.ca/trees/private_trees.htm.

Chapter 658, Ravine and Natural Feature Protection, of the City of Toronto Municipal Code, protects trees and natural features in designated areas of the City. There is no minimum diameter for a tree to qualify for protection under the Ravine and Natural Feature Protection By-law. Trees of any size located in the designated areas qualify for protection. For more information visit our website at www.toronto.ca/trees/ravines.htm.

Types of Tree Damage

Physical injury to the main stem or branches of a tree will occur if construction equipment is permitted close to the trees or if structures are built into the growing space of a tree. Physical injuries are permanent and can be fatal.

Root cutting is another type of injury that can significantly impact the health of a tree. Excavation for foundations or utility installation may cut tree roots if the excavation is too close to the trees. The majority of tree roots are found in the upper 30 to 60 cm of soil. Trees can also become destabilized and may fail if structural support roots are severed. Prior to commencing with any excavation, an exploratory dig should be undertaken using a low pressure hydro vac system, with water pressure less than 20 p.s.i. This method of non-intrusive excavation will determine the presence or absence of roots and provide guidance to design construction projects with tree protection in mind.

Compaction of the soil in which tree roots grow is one of the leading causes of tree decline in Toronto's urban forest. Soil compaction occurs primarily from vehicles and equipment moving across the root zones. Often, you cannot see the damage being done and unless you have some arboricultural background you are likely not aware of the damage that can occur. Soil compaction causes the pore space in the soil, which contains air and water necessary for root growth, to be reduced. Without space available for oxygen and water, tree roots will suffocate and the decline of the tree will follow. Adding soil on top of tree roots can smother them by reducing the amount of oxygen and water they are accustomed to receiving. Only a few centimetres of added soil can have a significant and sometimes detrimental impact on the health of a tree.

Protecting Your Trees

There are a number of things that you can do to protect your trees and your neighbour's trees prior to, during and after any construction project. Hiring a qualified tree expert or natural resource specialist should be the first thing you do. A professional can provide the advice you need regarding your tree's current maintenance requirements and they can determine what impact your proposal will have on trees and the surrounding natural environment.

Once you have an inventory of the trees on your property and adjacent properties, and you know the tree by-laws that will apply to your site, you can begin to design your project with tree protection in mind, and prepare a tree preservation plan with a qualified tree expert. It is important to plan the location of any utilities at the beginning of any construction project as utility installation may be detrimental to tree health. Table 1 below provides **minimum** tree protection zones based on the diameter of the trees in question. Please consult this table when preparing tree protection plans and remember that these are minimum distances. Depending on the tree and the surrounding environment, much larger tree protection zones may be required by Urban Forestry to realistically protect the trees.

In addition to establishing and creating tree protection zones, it may be necessary to implement other protective measures, such as adding mulch to the root zone, aeration of the soil, pruning for deadwood or removing limbs that may be impacted by construction activity. This is also the time to determine the location where new trees can be planted to compliment the construction project and help with the renewal and growth of the urban forest.

Communication between owners, contractors and sub-contractors throughout the construction process is critical to ensure that everyone is aware of the issues surrounding tree protection, and fully understands the tree protection methodology. Construction damage to trees is often irreversible.

2. Table 1 - Tree Protection Zones

The following is a chart showing minimum required distances for determining a Tree Protection Zone (TPZ) for City-owned trees located on a City Street, in parks and trees on private property subject to either the Ravine and Natural Feature Protection By-law or the Private Tree By-law. Some trees and some site conditions may require a larger TPZ.

Tree Protection Zones:

Trunk Diameter (DBH)[1]	Minimum Protection Distances Required[2] **City-owned and Private Trees**	Minimum Protection Distances Required **Trees in Areas Protected by the Ravine and Natural Feature Protection By-law**
		Whichever of the two is greater:
< 10 cm	1.2 m	The drip line[4] or 1.2 m
10 – 29 cm	1.8 m	The drip line or 3.6 m
30[3] – 40 cm	2.4 m	The drip line or 4.8 m
41 – 50 cm	3.0 m	The drip line or 6.0 m
51 – 60 cm	3.6 m	The drip line or 7.2 m
61 – 70 cm	4.2 m	The drip line or 8.4 m
71 – 80 cm	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[5]

[1] Diameter at breast height (DBH) measurement of tree stem taken at 1.4 metres above the ground.
[2] Tree Protection Zone distances are to be measured from the outside edge of the tree base.
[3] Diameter (**30** cm) at which trees qualify for protection under the private tree by-law.
[4] The drip line is defined as the area beneath the outer most branch tips of a tree.
[5] Converted from ISA Arborists' Certification Study Guide, general guideline for tree protection barriers of 1 foot of diameter from the stem for each inch of stem diameter.

Within a TPZ there must be:

- no construction;
- no altering of grade by adding fill, excavating, trenching, scraping, dumping or disturbance of any kind.
- no storage of construction materials, equipment, soil, construction waste or debris.
- no disposal of any liquids e.g. concrete sleuth, gas, oil, paint.
- no movement of vehicles, equipment or pedestrians.
- no parking of vehicles or machinery.
- directional micro-tunnelling and boring may be permitted within the limits of a TPZ subject to approval by Urban Forestry.
- open face cuts outside a TPZ that are consistent with an approved plan and that require root pruning, require the services of a qualified arborist or approved tree professional. An exploratory dig, either by hand or using a low water pressure hydro vac method, must be completed prior to commencing with open face cuts outside the TPZ.

The above mentioned requirements are for area(s) designated as a TPZ. These requirements should also be implemented outside the TPZ in areas where tree roots are located. The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the dripline.

See **Detail TP-1 and TP-3** for further information.

3. Tree Protection Barriers

- Plywood tree protection hoarding or steel fence tree protection hoarding shall be installed in locations as detailed in an Urban Forestry approved Tree Protection Plan. Tree protection shall be installed in accordance with the City's Tree Protection Policy and Specifications for Construction near Trees and/or to the satisfaction of Urban Forestry. Within a City road allowance where visibility is a consideration, 1.2m (4ft) high orange plastic web snow fencing on a 2"x 4" frame should be used.

- All supports and bracing used to safely secure the barrier should be located outside the TPZ. All supports and bracing should minimize damage to roots.

- Where some fill or excavate must be temporarily located near a TPZ, a plywood barrier must be used to ensure no material enters the TPZ.

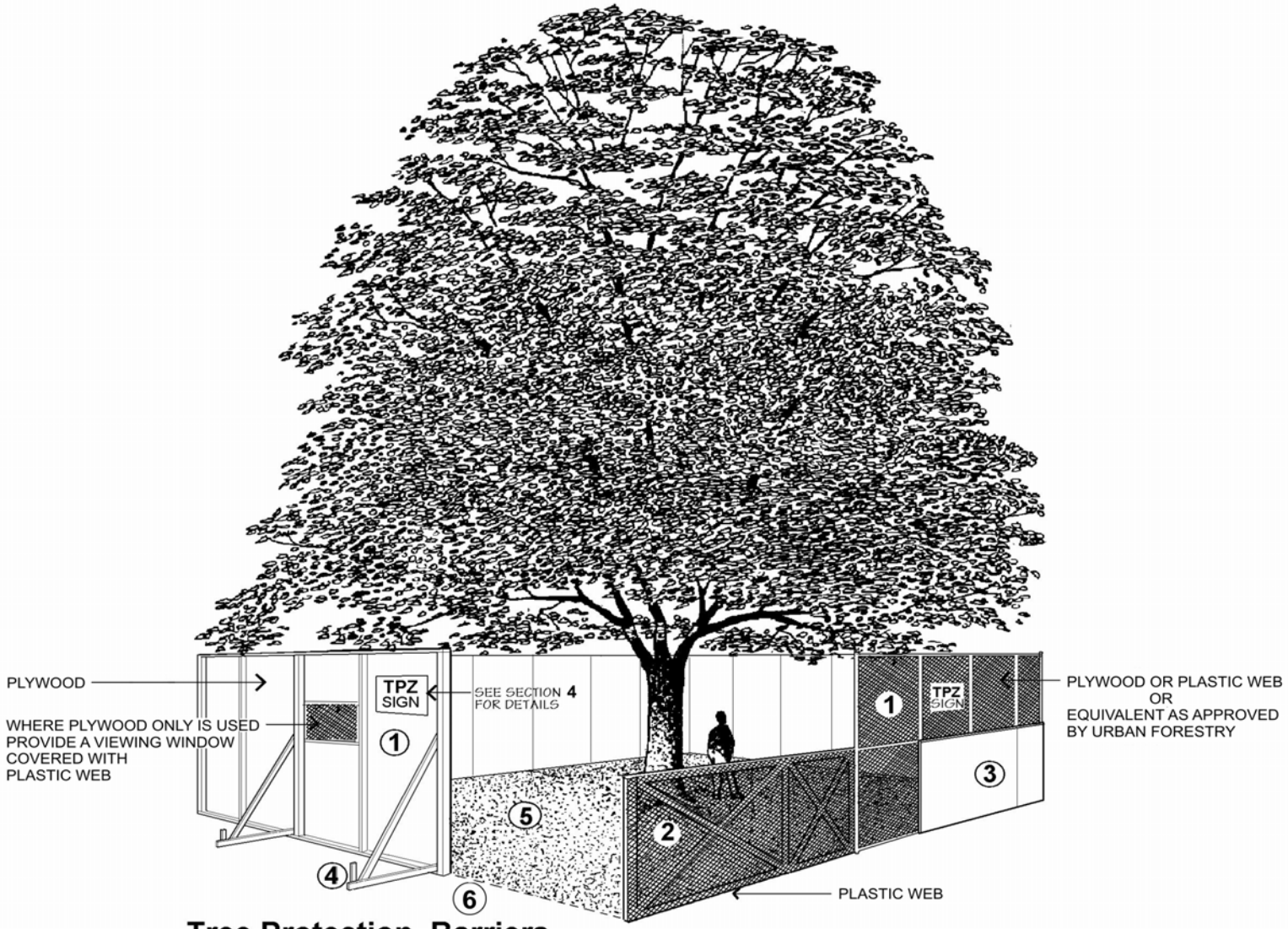
- Root protection shall be installed where required in construction access locations to the satisfaction of Urban Forestry in order to protect tree roots from compaction during construction. Root protection shall consist of a combination of filter fabric, clear crushed stone (half to three quarter inch diameter) placed in a layer 15cm deep, and steel plating or other material, as approved by Urban Forestry.

- Any area designated for stockpiling of excavated soil must be fenced with sediment control fencing. Sediment control fencing shall be installed in the locations as indicated in an Urban Forestry approved Tree Protection Plan. The sediment control fencing must be installed to Ontario Provincial Standards (OPSD-219.110) and to the satisfaction of Urban Forestry. The sediment control fencing can be attached to the tree protection hoarding.

- Once all tree/site protection measures have been installed you must notify Urban Forestry staff to arrange for an inspection of the site and approval of the site protection requirements.

- See **Detail TP-1** for further information.

- Where changes to the location of the TPZ or where temporary access to the TPZ are proposed, you must contact Urban Forestry to obtain approval.



Tree Protection Barriers

1. **Tree protection barriers must be a plywood or plastic web hoarding or equivalent as approved by Urban Forestry.**
2. **Tree protection barriers for trees situated on the City road allowance where visibility must be maintained can be 1.2m (4ft.) high and consist of orange plastic web snow fencing on a wood frame made of 2"x 4"s .**
3. **Where some excavate or fill has to be temporarily located near a tree protection barrier, plywood must be used to ensure no material enters the Tree Protection Zone.**
4. **All supports and bracing should be outside the Tree Protection Zone. All such supports should minimize damaging roots outside the Tree Protection Barrier.**
5. **No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the Tree Protection Zone.**
6. **Sediment control fencing shall be installed in locations indicated in an Urban Forestry approved Tree Protection Plan. The sediment control fencing must be installed to Ontario Provicial Standards (OPSD-219.110) and to the satisfaction of Urban Forestry.**

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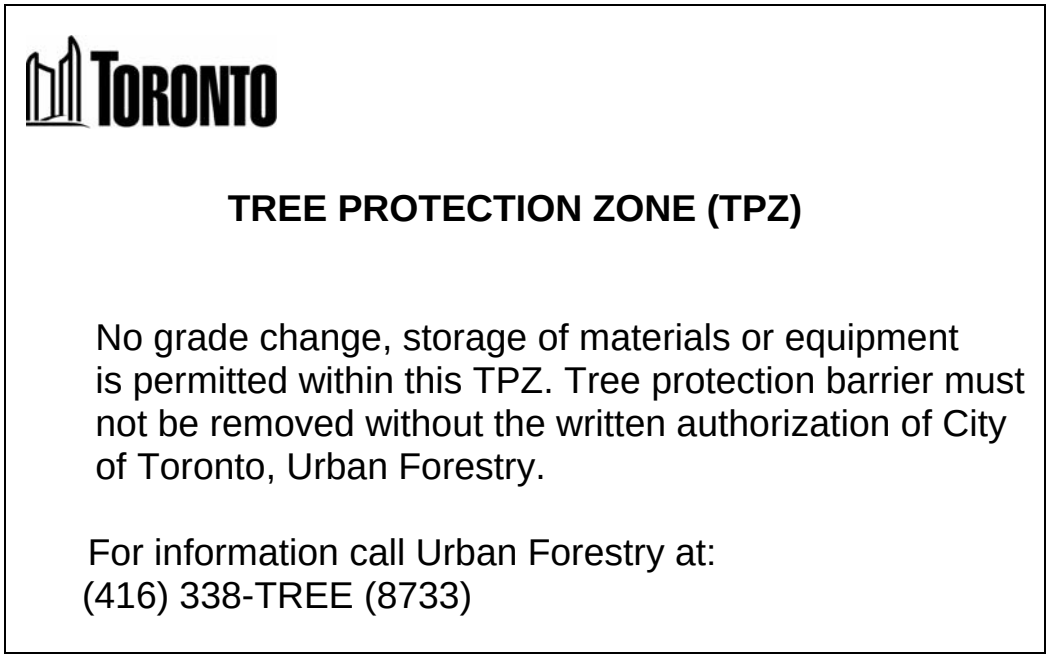
4. Tree Protection Signage

A sign that is similar to the illustration below may be required to be mounted on all sides of a Tree Protection Barrier for trees protected by the Trees on City Streets By-law and the Private Tree By-law. The sign should be a minimum of 40cm x 60cm and made of white gator board or equivalent material.



5. Site and Landscape Plans – Tree Protection Notes and Graphics

All applications for construction projects must include a site plan and/or landscape plan that includes details on tree protection prepared by or in consultation with a qualified arborist or approved tree professional. All Site and Landscape Plans must include the following information:
Identify size and species of all existing trees on or within 6 metres of the subject site.
Show extent of the crown of all existing trees.
Indicate trees to be removed.
Highlight and label tree protection barriers and tree protection zones. (See Table 1 to determine size of tree protection zone. Distances are to be measured from base of tree).
Indicate vehicular access and construction staging areas.
Indicate location of any excavation that requires root pruning.

See **Detail TP – 2a** for further information.

6. Tree Removal or Relocation

Any requests for removal or injury of a tree protected by City by-laws must be made on the appropriate application forms and submitted to the General Manager, Parks, Forestry and Recreation with attention to Urban Forestry at the appropriate address. Requests received by Urban Forestry for tree removal or injury may be forwarded to a Community Council and City Council for approval. If approval is granted for removal of City owned trees, applicants will assume all costs involved, which include tree value, removal, and replacement costs. If approval is granted for removal of private trees or trees in ravine and natural feature protected areas, the permit will be subject to conditions, including tree replacement, as determined by Urban Forestry.

For additional information, regarding the removal or relocation of City-owned trees or trees protected under the private tree by-law, please call (416) 338–TREE (8733). For ravine and natural area trees, please call (416) 392-1888.

7. Tree Guarantee Deposits

The General Manager of Parks, Forestry and Recreation may request a Financial Security to guarantee the protection of trees, or the satisfaction of all conditions of permit issuance. In addition the General Manager may require that a Letter of Acceptance of Responsibility be signed by an applicant. Financial Securities held by the City shall be released by the City provided that the trees are healthy and in a state of vigorous growth 2 years after the completion of all construction activity. It is the applicant's responsibility to advise the General Manager of Parks, Forestry and Recreation that tree protection zones have been created in accordance with approved plans.

For tree planting the General Manager may request a guarantee in an amount appropriate to secure the planting of trees. A Financial Security may be held by the City after the planting of the trees for a period of 2 years and shall be released by the City provided that the trees are healthy and in a state of vigorous growth 2 years after planting. It is the applicant's responsibility to advise the General Manager of Parks, Forestry and Recreation that trees have been planted in accordance with approved plans.

It is also the applicant's responsibility to submit a written request to the General Manager of Parks, Forestry and Recreation for the refund of a Tree Guarantee Deposit, 2 years after the completion of all construction activity and/or 2 years after tree planting.

Financial Securities must be in the form of a certified cheque, money order or letter of credit with amounts payable to the Treasurer of the City of Toronto.

8. Emergency Repairs to Utilities

Emergency repairs to underground utilities are permitted to commence immediately. The utility company concerned is responsible for notifying Urban Forestry at 338-TREE (8733) as soon as possible when trees are involved, so that an inspector can be dispatched. Urban Forestry staff may be contacted after hours by calling 416-338-9999, and requesting the assistance of an on-call Urban Forestry inspector. This phone number is only in service after regular business hours and is strictly for use in emergency situations.

9. Tree Protection Plan Notes, Detail TP – 2a

The following notes are to be provided on all site and landscape plans submitted in support of construction related applications.

Prior to site disturbance the owner must confirm that no migratory birds are making use of the site for nesting. The owner must ensure that the works are in conformance with the Migratory Bird Convention Act and that no migratory bird nests will be impacted by the proposed work.

It is the applicants' responsibility to discuss potential tree injury of trees on shared property lines with their neighbours. Should such trees be injured to the point of instability or death the applicant may be held responsible for removal and such issues would be dealt with in civil court or through negotiation. The applicant would be required to replace such trees to the satisfaction of Urban Forestry.

TREE PROTECTION ZONE:
No construction activity including grade changes, surface treatments or excavations of any kind is permitted within the area identified on the Tree Protection Plan or Site Plan as a Tree Protection Zone (TPZ). No root cutting is permitted. No storage of materials or fill is permitted within the TPZ. No movement or storage of vehicles or equipment is permitted within the TPZ. The area(s) identified as a TPZ must remain undisturbed at all times.

TREE PROTECTION BARRIERS:
For City-owned Trees:
Tree protection barriers for trees situated on the City road allowance where visibility must be maintained, can be 1.2m (4ft.) high and consist of chain link, or orange plastic web snow fencing on a 2" x 4" wood frame. All supports and bracing used to secure the barrier should be located outside the TPZ. All supports and bracing should minimize damage to roots outside the TPZ.
Where some fill or excavate has to be temporarily located near a tree protection barrier, plywood must be used to ensure no material enters the TPZ.

If the TPZ needs to be reduced to facilitate construction access, the tree protection barrier must be maintained at a lesser distance and the exposed TPZ protected with plywood and wood chips. This must first be approved by Urban Forestry.

For trees on private property situated on or adjacent to construction sites:
Tree protection barriers must be installed around trees to be protected using plywood clad hoarding or an equivalent approved by Urban Forestry. All supports and bracing to safely secure the barrier should be outside the TPZ. All such supports and bracing should minimize damage to roots outside the TPZ.

Tree Protection Hoarding in the Ravine & Natural Feature Protected Areas
The applicant/owner shall protect all trees in the protected area that have not been approved for removal or injury, throughout development works to the satisfaction of Urban Forestry.

Plywood (or chain link fence, if agreed to by Urban Forestry) tree protection hoarding shall be installed in the locations as indicated in the Urban Forestry approved tree protection plan. Tree protection hoarding shall be installed to standards as detailed in the City's Tree Protection Policy and Specifications for Construction near Trees and to the satisfaction of Urban Forestry.

Tree protection hoarding must remain in place and in good condition during demolition and/or construction and must not be altered or moved until authorized by Urban Forestry. Established tree protection zones must not be used as construction access, storage or staging areas. Grade changes are not permitted within established TPZ.

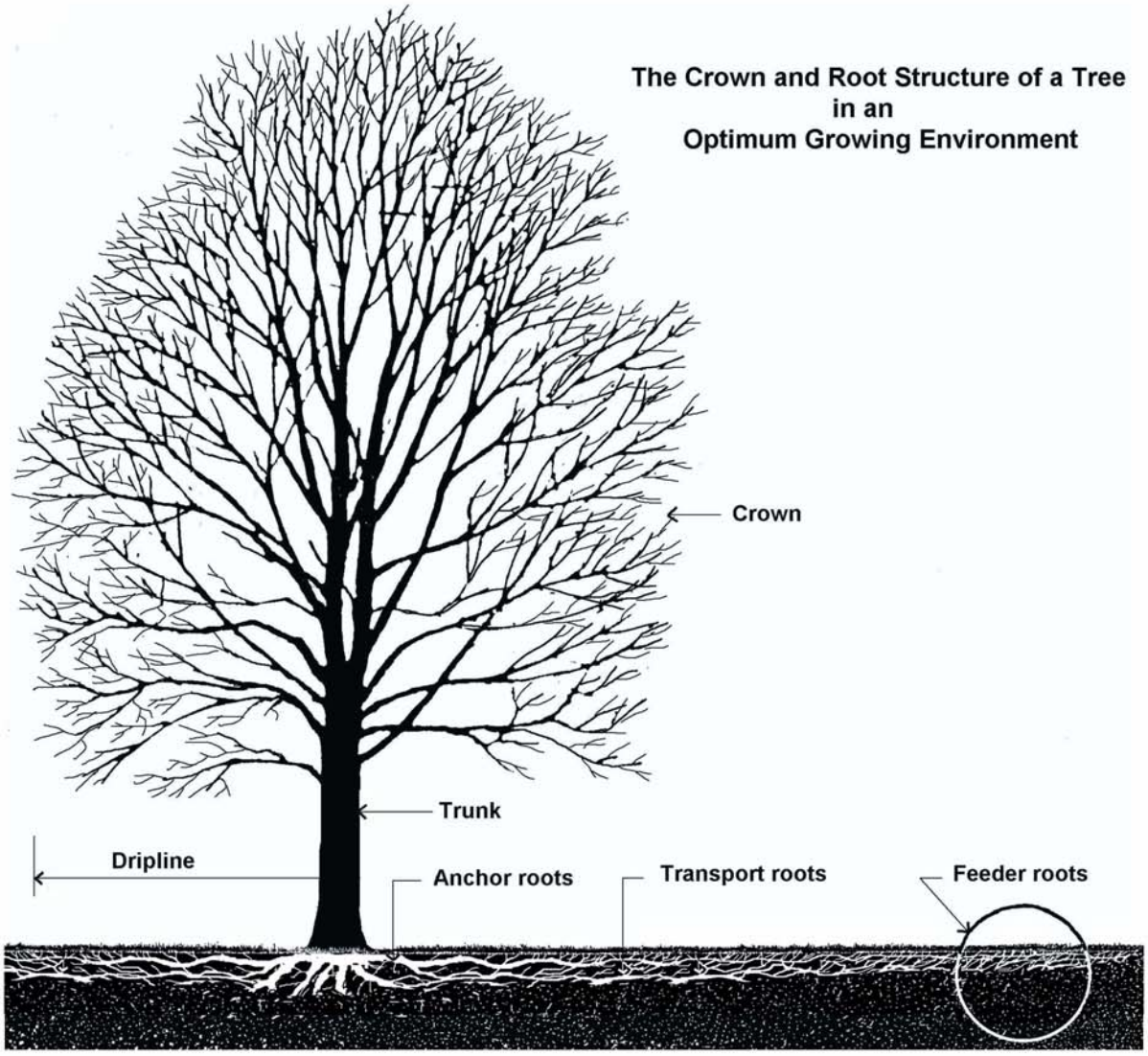
All additional tree protection or preservation requirements, above and beyond the required tree protection hoarding, must be undertaken or implemented as detailed in the Urban Forestry approved arborist report and/or the approved tree protection plan and to the satisfaction of Urban Forestry.

Sediment control fencing shall be installed in the locations as indicated in the Urban Forestry approved sediment control plan. The sediment control fencing must be installed to Ontario Provincial Standards (OPSD-219.110) and to the satisfaction of Urban Forestry.

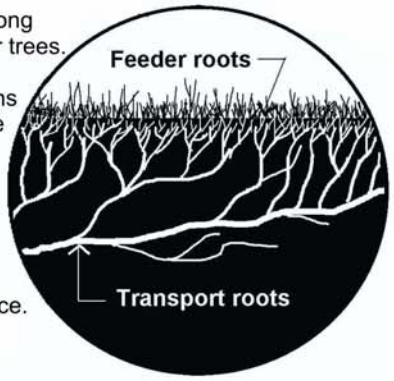
General Note:
Prior to the commencement of any site activity the tree protection barriers specified on this plan must be installed and written notice provided to Urban Forestry. The tree protection barriers must remain in effective condition until all site activities including landscaping are complete. Where required, signs as specified in Section 4 “Tree Protection Signage” must be attached to all sides of the barrier.
Written notice must be provided to Urban Forestry prior to the removal of the tree protection barriers.

ARBORICULTURAL WORK:
Any roots or branches which extend beyond the TPZ indicated on this plan which require pruning, must be pruned by a qualified Arborist or other tree professional as approved by Urban Forestry. All pruning of tree roots and branches must be in accordance with good arboricultural standards. Roots located outside the TPZ that have received approval from Urban Forestry to be pruned must first be exposed by hand digging or by using a low pressure hydro vac method. This will allow a proper pruning cut and minimize tearing of the roots. The Arborist/tree professional retained to carry out crown or root pruning must contact Urban Forestry no less than 48 hours prior to conducting any specified work.

The Crown and Root Structure of a Tree in an Optimum Growing Environment



The root system of a tree has three main parts:
Forming the base of the tree are large **anchor roots** from which extend long **transport roots** which together provide the main structural framework for trees. From the transport roots extend a complex network of **feeder roots** that grow outward and upward. These non-woody roots branch out to form fans of thousands of slender roots with fine root hairs. These tiny roots provide the surface where the absorption of air water and nutrients takes place that sustains the life of the tree.



A trees root system grows mainly within the top 60 cm of the surface of good quality, well drained and uncompacted soil.

The root system can extend to more than 2 to 3 times the **dripline** distance.

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Sept. 2008 **Detail TP - 3**

11. Tree Species that are Extremely Intolerant of Construction Disturbance

The following tree species are intolerant of construction disturbance, and tree preservation plans designed for them must take this into account. The tree protection zones required by these species may be quite extensive to avoid damage to the roots and crown associated with compaction, excavation or construction above grade that would impact the branches.

Acer rubrum (red maple)
Acer saccharum (sugar maple)
Betula papyrifera (paper birch)
Carya glabra (pignut hickory)
Fagus grandifolia (American beech)
Liriodendron tulipifera (tulip tree)
Ostrya virginiana (ironwood)
Pinus resinosa (red pine)
Pinus strobus (eastern white pine)
Prunus serotina (black cherry)
Quercus alba (white oak)
Quercus rubra (red oak)
Quercus velutina (black oak)
Tsuga canadensis (eastern hemlock)
Tilia americana (basswood)

12. Contact Information

Tree Protection and Plan Review (City-owned and Private Trees)

North York District
5100 Yonge Street, 3rd Floor
Toronto, ON, M2N 5V7
Telephone: 416-395-6670 Fax: 416-395-7886
tpprnorth@toronto.ca

Etobicoke York District
441 Kipling Avenue
Toronto, ON, M8Z 5E7
Telephone: 416-338-6596 Fax: 416-394-5406
tpprwest@toronto.ca

Scarborough District
70 Nashdene Road
Toronto, ON, M1V 1V2
Telephone: 416-338-5566 Fax: 416-396-4248
tppreast@toronto.ca

Toronto and East York District
50 Booth Avenue, 2nd Floor
Toronto, ON, M4M 2M2
Telephone: 416-392-7391 Fax: 416-392-7277
tpprsouth@toronto.ca

Ravine and Natural Feature Protection

Contact the Urban Forestry Planner for the area of the City in which you are working.

East of Victoria Park Avenue:
Telephone: 416-392-1377

West of Keele Street:
Telephone: 416-392-7815

North of Lawrence Avenue between Keele & Victoria Park:
Telephone: 416-392-0585

South of Lawrence Avenue, between Keele & Victoria Park:
Telephone: 416-392-1900

General Enquiries:
Telephone: 416-392-1888

Office Location
355 Lesmill Road
Toronto, Ontario
M3B 2W8
Fax: 416-392-6658