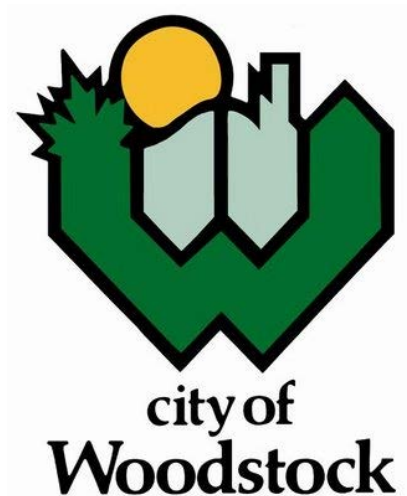


Landscape Design & Tree Management Guidelines



October 26, 2020 update by: MacKinnon & Associates

This 2020 Guideline is an update to the 2008 Landscape Plan Requirements and Landscape Guidelines and Landscape Specifications and Tree Protection documents originally prepared by Todhunter Associates Inc. The update was prepared in consultation with the City Parks Department, and is intended to provide more relevant direction in context of current development processes, and better represent City requirements.

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1.0 INTRODUCTION

With a strong horticultural tradition, the City of Woodstock recognizes the value of its significant natural environment and urban forest, as well as the benefit of creating high quality pedestrian scale outdoor spaces.

In order to ensure proposed development in the City preserves and enhances the quality of its outdoor spaces, these Landscape Guidelines have been created to assist with the development of landscape plans required for a variety of application processes.

The landscape standards described in this document are intended to preserve and enhance the City's natural environment and tree canopy coverage, to soften and enhance the impacts of parking lots and conflicting lands uses, and to create attractive outdoor spaces reflective of the City's heritage and standards.

Specifically, these guidelines are intended to:

- Clearly identify the City of Woodstock's expectations in regards to landscape design and development;
- To increase the compatibility of adjacent uses through the creation of buffers or screening between uses;
- Minimize the effects of urban heat island effect by increasing the tree canopy coverage within the City;
- Enhance the aesthetic appeal and liveability of Woodstock;
- Retain and incorporate existing tree specimens or groupings into proposed developments wherever possible;
- Encourage utilization of native plant material and groundcovers that are suited to the site's climate and water availability; and
- Identify and describe best practices for landscape construction to ensure the long term success of landscape installations.

1.1 Requirements for Landscape Plans

These guidelines reflect existing by-laws policies and regulations and are not intended to supersede established approval processes or regulatory frameworks. Instead, they are intended to assist the City and the Developer in creating quality developments with appropriate landscaping, innovative site planning and high level design resolution.

Any landscape design submission should be preceded by the review of the landscape plan in context of other policy documents, including but limited to the following:

- City of Woodstock Zoning By-Law
- Oxford Natural Heritage Systems Study
- East Woodstock Secondary Plan and Design Study – Industrial Design Guidelines
- City of Woodstock Application for Site Plan Control Process Design Guidelines
- County of Oxford Woodlands Conservation By-Law No. 6035-2018
- City of Woodstock Tree Protection By-Law Chapters 0762 and 0763
- Accessibility for Ontarians with Disabilities Act
- City of Woodstock Trails Master Plan
- Electrical Safety Authority – Planting Under or Around Powerlines and Electrical Equipment

It is also recommended that the proponent undertake preliminary consultations with staff from the Parks department.

1.2 Standard Information Required

Landscape drawings submitted to the City of Woodstock for approval shall be prepared by an accredited professional Landscape Architect in good standing with the Ontario Association of Landscape Architects (OALA). All landscape plans, complete with the consulting Landscape Architect's stamp and signature, should be submitted for review and approval by City Parks staff. The Owner shall retain the services of the landscape architect throughout the project, including landscape design, contract administration and inspection.

Although the requirements for landscape drawings may vary by development type, the following information, where applicable, shall be provided on all drawings submitted to the City of Woodstock for review:

- Name of proposed development
- Key map
- Professional seal of Landscape Architect on all relevant drawings
- Revision chart
- Drawing name, number, and date
- Applicable legends
- North arrow
- Metric scale
- Existing vegetation and conditions

- A list of proposed plantings, using a key system, which indicates the full botanical name, common name, quantity, quality, caliper, height, spread, and special remarks for each species
- Proposed snow storage areas
- Proposed garbage collection facilities
- All proposed curbing, ramps, stairs, and paved areas
- Identification of all pedestrian hardscape areas and proposed material
- Identification of all proposed landscape elements such as fencing, retaining walls, site furniture, and their corresponding details
- All boundaries, property lines, and limits of the proposed development including easements, daylight triangles, and reserves
- Above and below ground services and utilities

Drawings shall be coordinated and consistent with all other consultant drawings (site, civil, electrical).

2.0 LANDSCAPE DESIGN FOR DEVELOPMENT APPLICATIONS

The following guidelines apply to development and planning applications including plans of subdivision, condominium and consents/severances.

2.1 Tree Preservation and Vegetation Management

All trees on public lands are protected by the City of Woodstock Property Maintenance By-law Chapter #0762, while certain trees on private property are protected by City of Woodstock Property Maintenance By-law Chapter #0763.

Developers with proposals which may impact trees on public or private property should refer to these By-laws for applicable procedures and penalties prior to any submission or discussion with the City.

2.1.1 Arborist Report

Where existing trees are present on or immediately adjacent to a proposed development, an arborist report is to be provided in support of a draft plan of subdivision or condominium, consent, and severance application. The goal of the arborist report is to retain as many trees as possible and establish a clear idea of any compensation that will be required for trees affected by development.

The arborist report shall be prepared by an ISA certified arborist, and provide a general overview of the lands proposed for development and identify tree species within the limits of the proposed development area. Appropriate mapping shall be included to provide general locations for trees that are determined to be of significance or of value. The arborist report is to be used to inform the creation of the development concept in order to maximize tree retention.

The arborist report should contain:

- A table identifying quantity, condition and species of all trees that have a 10cm DBH or greater
- A written evaluation of retention opportunities, and explanation of how the proposed development maximizes tree retention.
- A figure illustrating approximate locations of existing trees in relation to the development concept.

Depending on the potential for development impacts on trees, a detailed Tree Management Plan may need to be developed at the time of detailed engineering design. Refer to **Section 3.1.1** for the requirements for Tree Management Plans.

The arborist report and tree management plan (if required), will assist the City and Developer in determining appropriate compensation for tree loss. Refer to **Section 3.1.2** for the applicable compensation criteria.

2.2 Landscape Entry Features

Entry features are to be located on private property that is appropriately sized for such use and should not interfere with sight lines.

Appropriate provisions for long term maintenance of the entry features are to be provided, as the City of Woodstock will not be responsible for maintenance of entry features during construction or after final acceptance.

2.3 Street Tree Planting Plan Requirements

The streetscape plays a vital role in defining the characteristic, aesthetic appeal, and function of a street. Street trees provide a great opportunity to bolster the City's tree canopy, which can improve the City of Woodstock's environmental sustainability and improve the health of its residents and visitors.

Street tree plans should illustrate the following:

- All proposed street trees including location, species, size and condition;
- All service and utilities that may impact tree installation, including but not limited to sanitary, stormwater and water laterals, electrical, gas, telecommunication lines;
- Proposed driveway locations.

Street trees shall adhere to the following standards:

- Street trees shall be provided in all public boulevards at 10m on centre along commercial, industrial, institutional, semi-detached or multi-unit residential blocks.
- Single family residential neighbourhoods should receive 1 tree per residence, and 2 trees along exposed lot flankages, where available soil volume and utility placements allow.
- Street trees shall be planted at a minimum of 60mm caliper.
- Street tree species shall be as described in **Section 4.6.1**.
- When proposed planting is in close proximity to overhead utilities, the consulting landscape architect shall ensure they adhere to the Electrical Safety Authority tree planting guidelines.

- The developer shall be responsible for installing street trees and maintaining them until acceptance by the City.

The planting of monocultures (dependence on one plant species) within the streetscape is detrimental to the maintenance of tree health and increases a streetscape's overall susceptibility to pests and diseases.

As such, the City of Woodstock encourages biodiversity in the streetscape by the following measures:

- The random sequencing of tree species is encouraged within a planting scheme.
- The planting of any one individual species is limited to eight (8) consecutive trees in any given planting scheme.
- The number of species required in a planting scheme shall be determined by the overall number of trees in the planting, as conforming to the following table.

Number of Trees in Planting	Minimum Number of Species
1-8	1
9-15	3
16-30	4
31-40	5
41-50	6
51-100	8
101-200	10
200+	12

2.4 SWM Facilities and Naturalized Areas

Landscape design plans for stormwater facilities and naturalized areas shall coordinate with final engineering design and shall adhere to the principles outlined in the Ministry of the Environment Stormwater Management Planning and Design Manual. The intent shall be to naturalize the facility with a mix of appropriate native plantings.

All plant material is required to be native to the City of Woodstock and shall conform to the following criteria:

- Min. 35mm caliper for deciduous trees

- Min. 100cm height for coniferous trees
- Min. 50cm height for shrubs
- Emergent and submergent plant material to be plugs

The following plant material ratios shall be considered as a minimum when proposing plants for SWM facilities and naturalized spaces:

- 1 tree/ 75m² of sloped area (5:1 or greater)
- 5 shrubs/ 100m² of sloped area (5:1 or greater)
- 75 emergent or fringe species/ 100 linear metre of shoreline
- Aquatic species are to be provided in sufficient quantities to establish an appropriate aquatic vegetative community.

Site shall be free of invasive species (eg: Phragmites), and all disturbed areas are to be top soiled and seeded with a native hydro seed mix. Refer to **Section 4.4** of this document for information regarding minimum topsoil requirements.

SWM facilities shall receive appropriate signage as shown in the Appendices.

2.5 Fencing Requirements

Proposed fencing shall be located in accordance with the City of Woodstock Fencing By-Law, and shall be required wherever parks and open space abut privately owned lands.

The location, type, height, and material of all proposed fencing shall be included in either the landscape plans or the engineering submission. Details shall be provided for all proposed fencing.

- Acoustic fencing, if required, shall be located as per the recommendations outlined in the appropriate Noise Report prepared for the development.
- A minimum of 1.5m high black vinyl chain-link fencing is required along the boundary of City of Woodstock open space property and privately owned lands.

Refer to appendices for standard City of Woodstock black vinyl chainlink fencing detail.

2.6 Active Parkland Requirements

Active parkland will be developed by the City in consultation with the surrounding neighbourhood. In new development, this process will be engaged only once housing is occupied. As a minimum for the acceptance of park land, the developer shall provide the following:

- Grading of park land consistent with the approved subdivision and grading plans;
- Any fill material placed in dedicated park land shall be consolidated and have sufficient compaction and structural integrity to allow for future parks development. Inspection records of placed fill shall be provided to the City;
- Topsoil or fill materials shall not be stored onsite;
- Minimum 300mm and maximum 500mm depth of topsoil. Refer to **Section 4.4** for topsoil specifications. Soil testing shall be provided on behalf of the Owner demonstrating compliance with the City of Woodstock topsoil specification;
- 1.5m high black vinyl chainlink fencing (see detail in the Appendices) installed along all private property boundaries, located 150mm onto park property;
- Water, stormwater and hydro service stubs provided at the property line;
- Park blocks shall be seeded with a low maintenance turf seed mix;
- As-built CAD grading plans of the completed park, and;
- Until City acceptance the developer shall maintain the park, and shall post signage with appropriate contact information indicating:

“This Block is the site of a future Park, but is not yet assumed by the Municipality. This Block has been designed for active public use and regular maintenance such as grass cutting will occur. The maintenance of these open spaces is the responsibility of the Developer until the City of Woodstock accepts them. All questions relating to the maintenance of these blocks is to be directed to the Developer.”

2.7 Recreational Trails

Recreational trails shall be developed in accordance with the design principles and specifications outlined in the City of Woodstock Trails Master Plan.

2.8 Approval Procedures

- a) The arborist report is to be submitted with the initial development application submission, unless waived by the City.
- b) Required landscape plans and tree management plan (if required), shall be submitted to the City of Woodstock Parks Department for approval during the registration phase of the application, once detailed engineering design is available.
- c) Any changes to the landscape plans post City approval will require the endorsement of City Staff.

- d) Upon the completion of all landscape elements the Owner shall contact the City of Woodstock Parks department in order to schedule a final acceptance meeting between City staff and the consulting landscape architect. Once the City can verify that landscape works have been completed in general conformance with the landscape plans provided, City staff will provide a written notice of the commencement of the warranty period. Please refer to **Section 4.8** for information on warranty periods.

- e) At the end of the warranty period the Owner should contact the City of Woodstock Parks department in order to schedule a final warranty meeting between the City staff and the consulting landscape architect. Any plant material that is dead or deemed to be unfit for acceptance shall be replaced at the Owner's expense. The City retains the privilege to extend the warranty period for any replaced materials.

3.0 LANDSCAPE DESIGN FOR SITE PLAN APPROVAL

Generally, landscape submissions for site plan approval shall identify existing vegetation, make recommendations for preservation, protection and removal of existing trees, and provide sufficient detail to qualify the scope and intent of proposed landscaping. All site landscape design shall seek to:

1. Maintain and enhance existing vegetation whenever possible within each development block;
2. Attempt to maximize tree cover and tree canopy in each development block;
3. Create pedestrian scale landscapes by softening dominant building masses;
4. Screen unsightly views and minimize the visual impact of parking and service facilities from adjacent properties and street frontages;
5. Create visual consistency between adjacent properties and streetscapes; and
6. Provide four-season interest.

3.1 Tree Preservation and Vegetation Management

This section provides guidelines for the protection of existing trees during construction. For specific standards, refer to tree protection specifications in **Section 4.1**.

All trees on public lands are protected by the City of Woodstock Property Maintenance By-law Chapter #0762, while certain trees on private property are protected by City of Woodstock Property Maintenance By-law Chapter #0763.

Developers with proposals which may impact trees on public or private property should refer to these By-laws for applicable procedures and penalties prior to any submission or discussion with the City.

3.1.1 Tree Management Plan

For the entire property to be developed, the Proponent shall submit a tree management plan for all trees on the subject property or within 6m of the property line with a diameter of 10cm in diameter or greater, measured at 1.4 meters above ground. Plans shall be prepared by an ISA certified Arborist.

The following information shall be provided on the plan:

- a) For each tree, the species, trunk diameter (at 1.4 meters height) and location must be noted clearly and accurately.

- b) Where there is more than one tree to be removed, the trees must be numbered.
- c) Tree Information including species, size, condition, structural integrity, disease, infestations and vigor.
- d) Recommendations for preservation and removal, including appropriate tree protection measures as required.
- e) Outline of the proposed development in which indicates the location of any proposed buildings, parking areas, retaining walls, walkways, slopes, limit of grades, and engineering elements that could impact existing trees.
- f) In instances where boundary trees or trees on adjacent properties may be impacted by processes of development, letters of understanding shall be provided by adjacent property owners prior to final approval of the plans.

3.1.2 Tree Compensation

All trees proposed to be removed on site shall be appropriately compensated for, either by planting of new 60mm caliper trees above and beyond the standard requirements outlined in this document, or by providing the corresponding cash in lieu to the City. Compensation shall be provided at a rate of 3:1 (3 new trees for each 1 tree removed). For cash in lieu values, refer to the City's by-law Chapter 330 – Fees and Charges.

Compensation will be required for trees that meet the following criteria:

- 10cm DBH or greater
- In fair health condition or better
- Are species other than the following:
 - Acer negundo (Manitoba Maple)
 - Alnus altissima (tree of heaven)
 - Elaeagnus angustifolia (Russian Olive)
 - Fraxinus species (only those infected with the Emerald Ash Borer)
 - Malus species (Apple)
 - Morus alba (White Mulberry)
 - Rhamnus species (Buckthorn)
 - Robinia pseudoaccacia (Black Locust)
 - Ulmus pumila (Siberian elm)

Damage or removal of trees approved for retention on the approved drawings through carelessness or negligence on the part of the Owner or Contractor shall be subject to a compensation value established by the City' Arborist using the ISA standard for tree valuation, most current edition.

Where compensation is required, it is to be provided above and beyond the standards described in this document. Street trees and other similar required plantings by this guideline are not considered compensation.

3.2 Landscape Design Standards

An effective landscaping plan should utilize a variety of techniques to achieve a design that is both aesthetically balanced and sustainable.

While the use of plant material native to the City of Woodstock is preferred, it is recognized that this is not always appropriate. Consulting landscape architects shall prioritize the use of plant material that is appropriate for the conditions of each site. Plant materials that do not require irrigation once established are also encouraged.

The use of appropriate landscape elements is required to achieve the following:

3.2.1 General Development Requirements (All sites)

- Vehicular access is to be defined by planting features;
- Main building entrances are to be highlighted with landscape accent areas;
- Provide bicycle parking spaces, using standalone inverted 'U' style racks or similar. Each bicycle parking space shall be 0.6m x 1.8m;
- Provide foundation planting for large expanses of exposed building foundation;
- Provide perimeter tree planting as per section 3.3;
- Provide parking lot screening as per section 3.4;
- Provide screening as per section 3.5.

3.2.2 Industrial Development

- Amenity space for staff use is to be provided.

3.2.3 Commercial Development

- Amenity space for staff use is to be provided;
- Site amenities such as benches, waste containers, etc. to be provided;
- Landscaping to be provided along internal roads.

3.2.4 Institutional Development

- Site amenities such as benches, waste containers, etc. to be provided;
- Landscaping to be provided along internal roads.

3.2.5 Residential – Medium - High Rise Development

- Large scale residential developments shall consider age appropriate play equipment or amenity spaces as a feature on site;
- Site amenities such as benches, waste containers, etc. to be provided;
- Landscaping to be provided along internal roads.

3.2.6 Residential – Low Rise Development

- Site amenities such as benches, waste containers, etc. to be provided;
- Landscaping to be provided along internal roads.

3.3 Perimeter Landscaping

In order to increase canopy coverage, tree planting is required along all property perimeters. Trees may be grouped as long as quantities are provided. Trees should be provided at the following rates:

Tree Spacing Chart

Proposed Development	Abutting Use				
	Residential	Commercial	Industrial	Institutional	R.O.W.
Residential	7.5m	7.5m	6m	7.5m	10m
Commercial	7.5m	10m	10m	7.5m	10m
Industrial	6m	10m	10m	6m	10m
Institutional	7.5m	7.5m	6m	7.5m	10m

3.4 Parking Lot Landscaping

Parking lot landscaping refers to landscaping of areas adjacent to or within parking lots and associated access driveways. Parking lot landscaping serves to provide visual relief between

areas dominated by vehicular functions and the remainder of the development. In addition, parking lot landscaping also serves to direct vehicular and pedestrian circulation, and to establish pedestrian walkway hierarchies.

Landscape for parking lots shall comply with the following:

- Provide for a daylight triangle measuring 5m along the property line and 5m perpendicular to the property line, located on both sides of all entrances to the site, within which no plant material structure shall exceed 0.9m in height. Refer also to the City of Woodstock zoning bylaws to ensure that proposed planting is in accordance with the requirements of zoning sight triangles.
- Parking areas shall be screened from public views. Four-season planting screens are to be established to ensure that vehicular headlights are blocked from neighbouring properties. Planting screens shall adhere to the following formula:
 - Except in industrial zones, landscape strips between the public right-of-way and parking lot should consist of a minimum of 1 shade tree and 10m² of planting bed for every 10m of property frontage.
 - For every 24 linear parking spaces (48 for double row of parking stalls), a minimum 5m x 6m landscaped island with concrete curb edging shall be established suitable for tree planting. All parking islands should incorporate shade trees where there is sufficient soil volume to aid in reducing urban heat island effect. Sod will not be accepted in parking islands but should be planted with perennials and/ or grasses instead.

3.5 Screening and Buffers

In addition to landscape buffers required by the City of Woodstock Zoning By-law, four-season, full opacity screens shall be provided to shield trash enclosures, dumpsters, loading docks, HVAC and utility structures (such as transformers) from the street and from adjacent sensitive land uses (considered to be residential, commercial and institutional lands).

Screens may be a combination of plant materials, fencing, decorative masonry or structural building extensions.

3.6 Accessibility Standards

All development shall be consistent with the requirements of the AODA, including but not limited to the inclusion of:

- Dedicated accessible pedestrian paths of travel
- Pathway gradients at 5% or less
- Tactile warning indicators where pedestrian movement meets vehicular movement

Refer to the Illustrated Guide to Accessibility Standard for the Design of Public Spaces by the Global Alliance on Accessible Technologies and Environments.

3.7 Approval Procedure

- a) The following plans are required to be submitted for Site Plan Approval:
 - Tree Management Plan (unless waived by City Staff)
 - Landscape Plan and Details
- a) Drawings submitted as part of a site plan approval application will be confirmed in writing as 'Approved' by City staff.
- b) The developer shall satisfy any financial obligations (cash in lieu, securities as may be required) prior to final site plan approval.
- c) Prior to site works commencing, the Owner shall provide a letter of certification from the consulting landscape architect/arborist that the approved tree protection measures are installed acceptably. (if required)
- d) Upon the completion of landscape works the consulting landscape architect shall provide the City with a certification letter to confirm that landscape works have been completed in general compliance with the approved plans.
- e) On receipt of this notice, the City of Woodstock Parks department will schedule a final acceptance inspection, and provide written notice of acceptance or deficiency as appropriate

4.0 LANDSCAPE STANDARDS AND SPECIFICATIONS

The following specifications describe best practices and standards that are required to maintain the integrity of proposed landscapes, and ensure landscape design solutions are successful.

These standards should be applied to both development applications and site plan approval processes.

4.1 Tree Protection

This section covers the requirements for the protection of existing trees.

4.1.1 Tree Protection Zone (TPZ)

- Tree protection fencing shall be erected at the critical root zone or beyond, prior to commencement of any clearing, grading or other construction activity;
- The critical rootzone is considered to be the dripline of the tree + 1m.
- Storage of equipment, materials, or operation of heavy machinery within the protected rootzone of existing trees to remain is not permitted.
- Tree protection shall not be removed until completion of final landscaping.

4.1.2 Tree Protection Barrier and Signage

- Tree protection barriers, erected for trees situated on the City road allowance where visibility must be maintained, may be 1.2m high and consist of paige wire fencing on t-bar stakes, with 150mm x150mm cedar posts every 30m and change of direction.
- All supports and bracing used to secure the barrier should be located outside the Tree Protection Zone (TPZ) to minimize damage to roots.
- Where fill or excavation has to be temporarily located near a tree protection barrier, Plywood must be used to ensure no material enters the TPZ.
- Tree protection signage must be mounted on all sides of a Tree Protection Barrier, at a minimum 1 sign for every 30m of fence. The sign should be a minimum of 40cm x 60cm and made of white gator board or equivalent material.

Obtain approval of sign layout from the City of Woodstock before proceeding. The sign should include the City of Woodstock logo, and the following text:

TREE PROTECTION ZONE (TPZ)

No grade change, storage of materials or equipment is permitted within this zone. Tree protection barrier must not be removed without the written authorization of the City of Woodstock.

4.1.3 Existing Trees in Excavation Zones

- Notify the City and Consultant before commencing excavation near trees.
- As a part of any tree removal operation, all stems limbs and stumps should be removed from the site.
- Any roots disturbed during construction should be cut cleanly and buried immediately.
- Ensure tree viability at all times.

4.2 Trenching and Tunnelling

1. Trenching and tunnelling for services should avoid, where feasible, disrupting the root system of trees which are to be retained on a development site. If a situation arises where interference with the root system cannot be avoided, the steps listed under this section must be followed if the trees are to remain viable after construction.
2. Air spading should be used as an alternative to open trenching within the dripline of trees.
3. When open trenching is necessary, it should be done as far from the trunk of the tree as possible. No more than 25% of tree roots are to be removed.
4. When trenching near shallow-rooted trees, avoid removal of anchor roots to reduce the risk of toppling the tree over during high winds.
5. Before backfilling trenches, all damaged roots over 25mm in diameter should be cut cleanly. Backfill with quality topsoil, ensuring there are no air pockets, to enhance root rejuvenation.
6. The City of Woodstock's guidelines for tunnelling lengths at or near trees shall be used to determine the appropriate distance of tunnel where open cut is generally not permitted.
7. Where impossible to tunnel the distance required by the above criteria, it is suggested that tunnelling begin at the specified distance with sufficient surface openings to make work feasible.
8. Within the specified distances from the trunk, avoid cutting roots over 25mm in diameter whenever possible. Any roots of this size which are cut should be cleanly cut back to undamaged tissue.

9. Where tunnelling has been used, extreme care must be taken when backfilling to ensure that no air pockets remain to further injure the tree.
10. Quality soil mixture shall be used when backfilling under trees.

4.2.1 Tunnelling Instructions

Tunnelling must not enter or exit the ground within the critical root zone. Tunnelling must be at least 60cm depth to avoid contact with the trees absorbing roots.

4.3 Services, Stakeouts, and Planting Adjustments

Contractors shall locate and mark all utilities prior to landscape installations. Tree and shrub pits shall comply with ESA setback requirements and those of the local hydro authority, and shall not be located within 1m of any underground hydro road-crossing location. All excavations within 1m of any buried Hydro or Gas utility shall be hand-dug. Tree or shrub pits shall not be permitted within a switchgear facility easement.

Minimum required offsets from other utilities should be observed. Where none is specified, a 1m min. buffer is acceptable.

Final street tree locations on Municipal right-of-ways (ROW) may require adjustments from locations on plan which are subject to as-built utilities, services, and driveway locations. The City of Woodstock reserves the right to request additional street tree plantings. Provide notice and coordinate all street tree locations with the City prior to planting.

Street tree locations shall be consistent with City of Woodstock engineering department standard road right of way cross sections, which illustrate proposed trees in relation to services and utilities.

Where overhead wires present potential for conflicts with proposed tree species, the developer shall adhere to the Planting Under or Around Powerlines and Electrical Equipment created by the Electrical Safety Authority.

A copy of the acceptable species can be found in **Section 4.6.1** of this guideline.

Offset tree locations at 1m min from the centre of water mains, or as much as possible.

Avoid planting trees where they will obstruct sight lines to intersections, signs, entrances or traffic control signals. Refer to the City of Woodstock zoning by-laws regarding sight triangles and the allowance for landscape materials within them.

Trees should not be located within 1m of the top of bank along ditches or where water may collect and temporarily pool, in order to allow for maintenance of the ditch.

4.4 Topsoil Requirements

Topsoil shall be a fertile, natural loam, capable of sustaining healthy growth, containing a minimum of 4% organic matter for clay loams and 2% organic matter for sandy loam, to a maximum of 25% by volume.

Topsoil shall be loose and friable, free of subsoil, clay lumps, stones, roots or any other deleterious material greater than 50mm diameter. Topsoil shall be free of all litter and toxic materials that may be harmful to plant growth. Topsoil containing sod clumps, crabgrass, couch grass or other noxious weeds is not acceptable. Topsoil shall not be delivered or placed in a frozen or excessively wet condition. Topsoil acidity/ alkalinity shall be in the range of 6.0pH to 7.5pH.

Where necessary and at the discretion of the City of Woodstock, the Owner shall be required to provide topsoil test recommendations to the City confirming topsoil type (i.e. percentage of sand, clay and organic content), macro and micronutrient content and pH levels. The Owner shall ensure fertilizers and soil amendments are incorporated into the topsoil in accordance with topsoil test recommendations.

Topsoil depth requirements are as follows:

Boulevards (non-treed)	300mm minimum continuous depth
Shrub Planting Beds	500mm minimum continuous depth
Tree Planting Pits/Beds	600mm minimum continuous depth
Sodded/Seeded Areas (non-boulevard)	300mm minimum continuous depth

4.5 Plant Material Standards

Spacing

Plant materials shall be spaced based on an 80% maturity height and spread. This is in order to prevent overcrowding or unnecessary competition among plant materials, and to ensure the ease of maintenance in tight areas such as median strips, public easements and cul-de-sacs.

Species and Size of Plant Materials

Suitable trees and varieties and cultivars to be planted in Woodstock should be selected from the approved list as found **Section 4.6.1**, List of Acceptable Trees. Sizes (height, spread and/or caliper), characteristics (such as container, balled and burlapped, etc.) and spacing of tree shall conform to the specifications found on the same list.

Unless otherwise noted, the minimum size for trees and shrubs shall be as follows:

Deciduous Trees	60mm caliper
Coniferous Trees	1.5m height (min)
Deciduous or evergreen shrubs	60cm in height (deciduous)/width (coniferous)

Location

When planting near utilities, the location and species of the plant material must be coordinated with mechanical and electrical site plans to ensure the non-obstruction of storm and sanitary sewers, water service, hydro, telephone, gas lines and other services. All utilities must be demarcated by the developer or contractor prior to any excavation.

4.6 Plant Material Considerations

4.6.1 Acceptable Tree Species in the City Woodstock

The following table outlines acceptable tree species in the City of Woodstock. Note for the list below varieties and cultivars of the species listed will be reviewed pending specific site conditions and design applications.

Tree Species		Planting Locations			Min. Soil Volume (m3)
Botanical Name	Common Name	Parks & Lawns	Street Trees	Dwarf Trees (Hydro)	
Abies alba	Silver Fir	x			30
Abies concolor	White Fir	x			30
Acer x freemanii	Freeman Maple	x	x		30
Acer ginnala	Amur Maple	x	x	x	17
Acer rubrum	Red Maple	x			30
Acer saccharinum	Silver Maple	x			30
Acer saccharum	Sugar Maple	x	x		30
Acer tataricum	Tartarian Maple		x		17

Tree Species		Planting Locations			Min. Soil Volume (m3)
Botanical Name	Common Name	Parks & Lawns	Street Trees	Dwarf Trees (Hydro)	
<i>Aesculus x carnea</i>	Red Horsechestnut	x	x		30
<i>Aesculus glabra</i>	Ohio Buckeye	x	x		17
<i>Aesculus hippocastanum</i>	Horsechestnut	x			30
<i>Amelanchier spp.</i>	Serviceberry	x	x	x	17
<i>Betulus papyrifera</i>	White Birch	x			30
<i>Carpinus betulus</i>	European Hornbeam		x		30
<i>Carpinus caroliniana</i>	Blue Beech		x		30
<i>Carya cordiformis</i>	Bitternut Hickory	x			30
<i>Carya ovata</i>	Shagbark Hickory	x			30
<i>Celtis occidentalis</i>	Hackberry	x	x		30
<i>Cercidiphyllum japonicum</i>	Katsura Tree	x	x		17
<i>Cercis canadensis</i>	Eastern Redbud	x		x	30
<i>Corylus colurna</i>	Turkish Hazelnut	x	x		30
<i>Crataegus spp.</i>	Hawthorn (Thornless)	x	x	x	17
<i>Fagus sylvatica</i>	European Beech	x	x		30
<i>Gleditsia triacanthos</i>	Honeylocust	x	x		30
<i>Ginkgo biloba</i>	Maidenhair Tree	x	x		30
<i>Gymnocladus dioicus</i>	Kentucky Coffeetree (Podless)	x	x		30
<i>Larix decidua</i>	European Larch	x			30

Tree Species		Planting Locations			Min. Soil Volume (m3)
Botanical Name	Common Name	Parks & Lawns	Street Trees	Dwarf Trees (Hydro)	
Liquidambar styraciflua	Sweetgum	x			30
Liriodendron tulipifera	Tulip Tree	x	x		30
Magnolia x soulangiana	Saucer Magnolia	x			17
Nyssa sylvatica	Black Gum	x	x		17
Ostrya virginiana	Iron Wood	x	x		30
Platanus x acerifolia	London Plane Tree	x	X		30
Phellodendron amurense	Amur Corktree	x	x		30
Picea abies	Norway Spruce	x			30
Picea glauca	White Spruce	x			30
Picea pungens	Blue Spruce	x			30
Pinus strobus	Eastern White Pine	x			30
Prunus spp. 'Ornamental Cherry/ Columnar/ Sargent/ Kwanzan'	Ornamental Cherries	x			17
Pseudotsuga menziesii	Douglas-fir	x			30
Quercus alba	White Oak	x	x		30
Quercus bicolor	Swamp White Oak	x			30
Quercus coccinea	Scarlet Oak	x	x		30
Quercus macrocarpa	Bur Oak	x			30
Quercus muehlenbergii	Chinquapin Oak	x			30

Tree Species		Planting Locations			Min. Soil Volume (m3)
Botanical Name	Common Name	Parks & Lawns	Street Trees	Dwarf Trees (Hydro)	
Quercus palustris	Pin Oak	x	x		30
Quercus robur	English Oak	x	x		30
Quercus rubra	Red Oak	x	x		30
Quercus velutina	Black Oak	x	x		30
Sophora japonica	Japanese Pagodatree	x	x		30
Thuja occidentalis	Eastern White Cedar	x			17
Tilia americana	American Basswood	x			30
Ulmus carpinifolia	Homestead / Homestead E	x	x		30
Zelkova serrata	Japanese Zelkova	x	x		30

4.6.2 Stock

High quality nursery stock is a prerequisite to ensuring the survival of trees. As such, all trees shall conform to the Canadian Standards for Nursery Stock and be of standards quality, true to name and type, and a first-class representative of their species or variety.

4.6.3 Form Vigour of Trees

All trees shall be true to type, structurally sound with no evidence of dead branches, sun scald, frost cracks, abraded or broken bark, and be free of insect or disease infestation.

All trees shall have a full, well-developed top with one distinctive vertical leader, and a root system typical of the species. All parts shall be moist and show active green cambium when cut.

All trees must meet these specifications at the time of planting and final inspection by the City of Woodstock Parks department. Trees that are rejected will be replaced at the Contractor's expense.

4.6.4 Shipping of Trees

Trees must be transported to the planting site in a manner that will minimize damage to crowns, root balls and/or roots. Balled and burlapped (B&B) trees must have no cracks in the ball.

Cover plant foliage with tarpaulin, and protect roots by means of dampened straw, peatmoss, sawdust, or other acceptable material to prevent loss of moisture during transit and storage.

4.6.5 Planting Holes, Drainage, and Root Pruning – Balled and Burlapped Trees

All tree plantings shall be done in accordance with the standards as shown in the planting details found in the Appendix.

Planting hole must be at 40cm greater than the diameter of the rootball; the depth of the hole will be 150mm deeper than the depth of the ball.

4.6.6 Backfilling

Backfill is to be placed in layers approximately 15cm in depth, and firmly tamped in place in such a manner that the tree retains its vertical position without support. Particular care is to be taken to ensure that no air pockets remain under or around roots and that damage does not occur to the root system. The fill shall be thoroughly watered immediately after planting.

At grade, a ridge of soil located at the edge of planting hole shall be formed to a height of 10cm, to act as a catch basin for any subsequent watering and to retain mulch.

Balled and Burlapped trees shall have the burlap cut and rolled back from the ball and buried under at least 10cm of soil. All wire, rope, burlap and twine from around the top 1/3 of the root ball shall be cut and removed.

All excess fill removed from the planting holes, which does not meet planting specifications, shall be removed by the Contractor, along with all branches, roots from pruning, leftover wire and plastic shields from staking. Any damage done to the surrounding site shall be repaired by the Contractor at his or her own cost.

4.6.7 Bed Preparation

Within 48 hours of planting, a circular (or other such suitable shape as may fit the site) area around the root ball shall be cultivated to improve future root growth.

The area shall extend to a minimum of 1m from the trunk of the tree in all directions; all sod shall be removed from the area, and the soil shall be broken up and cultivated to a depth of at least 15cm within the 1m radius.

4.6.8 Pruning

The crown of the tree shall be pruned from the bottom up at the time of planting to remove all dead and damaged branches. Branches with included bark should be pruned from the tree.

The terminal or leader is not to be pruned unless broken. All cuts shall be collar cut as per ISA standards.

On all cuts over 2cm in diameter and bruises or scars on the bark, the injured cambium shall be cut back to living tissue and removed. Wounds shall be smoothed and shaped so as not to retain water. Large wounds produced by any means other than branch pruning may render the tree unacceptable, requiring replacement.

4.6.9 Staking

Where staking is required, B&B trees shall be supported by two (2) wooden stakes (2.4m in length) driven outside the ball in line with the direction of the prevailing wind. The wood stake must be driven at least 90cm below grade line, leaving at least 5cm between the top of the stakes and the first branch. Stake replacement shall be such that no main roots are severed by the stake being driven into the ground.

Within storm water facilities, staking is not required. However, should any trees move in either direction 10% or more from the vertical plane, the Contractor is responsible for straightening and staking the trees within one week of notification from the City.

On final inspection of guarantee, the Contractor will be responsible for the removal of stakes.

4.6.10 Tree Ties

Wire ties shall be wrapped with rubber hoses with 12mm outside diameters. A soft woven polypropylene material no less than $\frac{3}{4}$ " (2cm) wide is recommended. Plastic hoses are not accepted. The hose must completely encircle the trunk of the tree to ensure that no wire will contact the bark of the tree. Ties must not be tied tightly around trunk to avoid girdling.

For B&B trees where the two stakes are driven into the ground outside the root ball, the wire tension of the ties must be such that the tree is firmly, but not too tightly, supported and remaining in a vertical position.

On final inspection of the guarantee (after spring flush), the Contractor will be responsible for the removal of the ties.

4.6.11 Tree Wrapping

The Contractor shall remove all tree wrapping upon planting of the tree.

4.6.12 Mulching

Within 48 hours of planting, a mulch comprised of softwood chips or shredded bark, shall be spread over the entire planting pit and the bed preparation to a surface diameter of 2m.

All shrub planting beds are to be mulched to the same depth of 100mm.

4.6.13 Minimum Root Ball Diameter

The minimum acceptable root ball diameter for B&B trees shall be:

55cm for 40mm calliper trees

65cm for 55mm calliper trees

85cm for 75mm calliper trees

100cm for 100mm calliper trees

165cm for 150mm calliper trees

4.6.14 Watering

Watering should be applied directly after planting. The initial application of water should be included in the planting price.

New tree plantings shall receive tree watering bags (TreeGator or equal), which shall be re-filled twice weekly for the first 2 weeks after installation.

It is recommended that subsequent watering may be required up to twice per week depending on weather. Water sufficient to ensure plant material establishment.

4.6.15 Rodent Guards

In stormwater management ponds and other at risk areas, rodent guards are required to protect the trees from girdling by rodents. The City will provide written notification to the Contractor where rodent guards are required, prior to planting.

Rodent guards shall consist of either Tubex guards (or similar), or plastic spiral wrap wound around the base of trunk, up to a height of 60cm. These guards must be removed after two (2) years of growth.

4.7 Maintenance and Acceptance

1. All plant material shall be maintained by the Developer/Contractor, from the time of planting until acceptance by the Parks Supervisor or his/her designate.
2. A maintenance regime shall consist of proper cultivation, weeding, watering and pruning to establish and maintain plant material in a healthy growing condition.
3. The Developer/Contractor shall arrange a time to have the plant material accepted following the two (2) year guarantee period. At the time of inspection, all beds and tree pits shall be freshly cultivated, weeded and in a tidy condition, with all rubbish, leaves and dead plant debris removed.
4. Water to maintain soil moisture conditions for optimum growth and health of plant materials without causing erosion.
5. Apply biological controls in accordance with Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from Consultant prior to application.
6. Apply organic urea fertilizer in early spring at suppliers' suggested rate.
7. Remove dead, broken or hazardous branches from plant material.

4.8 Warranty

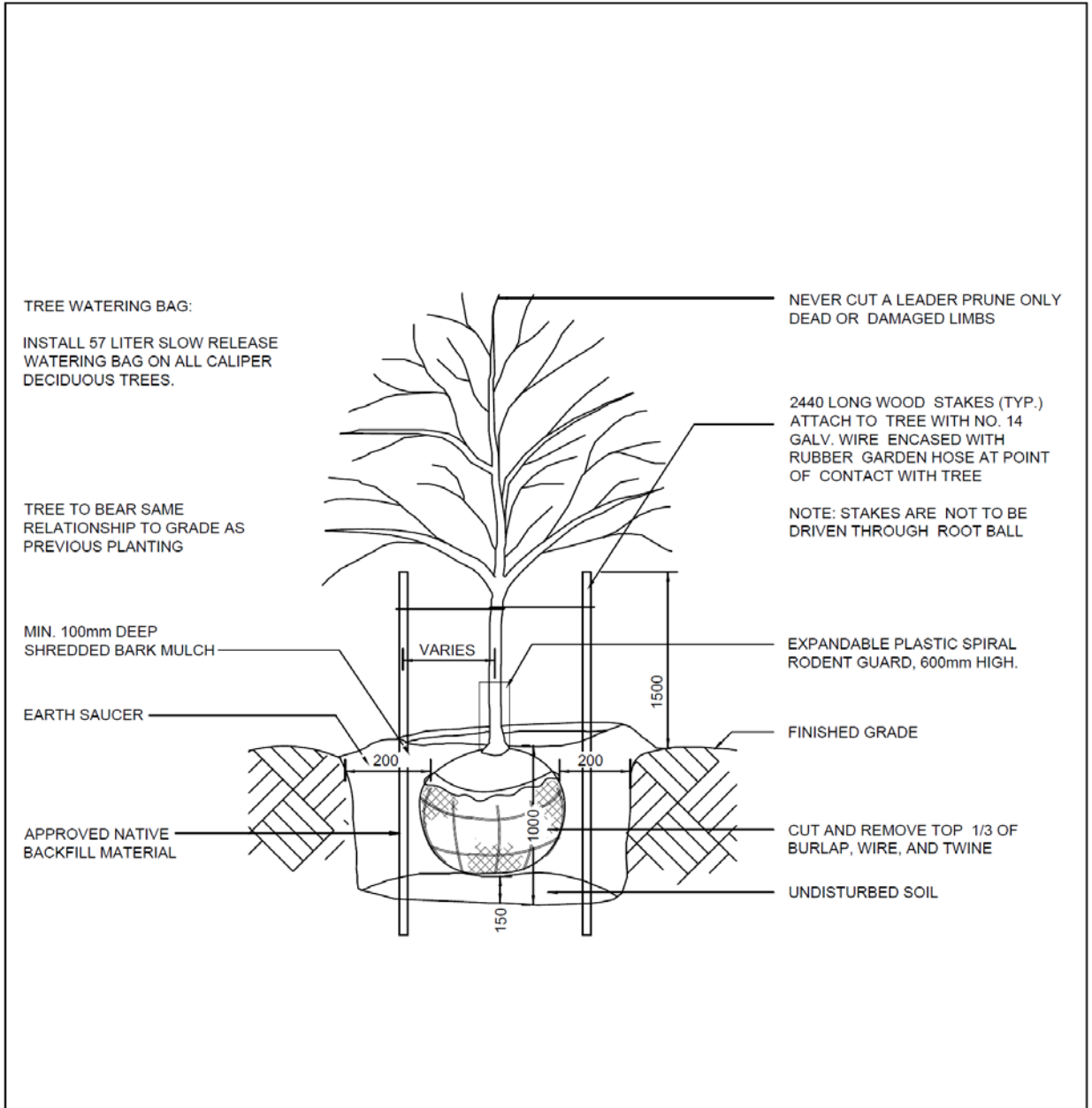
All plant material shall be guaranteed for health for a period of two (2) years from the date of acceptance. The City reserves the right to extend the warranty period, should plantings not demonstrate appropriate vigor and health. Should the City determine that a plant is not in a healthy condition at the end of the two (2) year term, the plant shall be replaced by the developer at their own expense. An additional year of warranty from the date of replacement must be guaranteed.


5.0 GLOSSARY OF COMMON TERMS

Ball and Burlap (B&B)	In reference to nursery grown plants and trees, a rootball that is retained with burlap and secured with string, wire, or twine.
Daylight Triangle	Triangular space at each corner of an intersection of two roads, or a driveway and a road, where the height of obstacles (signs, plants etc) is restricted to ensure visibility.
DBH	Diameter at Breast Height - a measurement of the size of an existing tree.
Heat Island Effect	Effect where large amounts of asphalt parking increase the heat of a given area.
Native Species	Plant or tree species that historically live and thrive within the City of Woodstock.
Rootball	In reference to nursery grown plant materials, refers to the ball of earth containing the roots of the plant or tree.
Tree Caliper	The size of a nursery grow tree, the diameter of the stem measured 150mm above the base of the rootball.
Tree Canopy	The area covered by a tree's branches and foliage.
Tree Crown	The top portion of a tree.
Tree Dripline	The edge of a tree's branching and foliage.
Wire Basket	In reference to nursery grown plants and trees, a rootball that is retained with a wire basket.

6.0 APPENDICES

The following section is comprised of the City of Woodstock standard details.



	DECIDUOUS TREE PLANTING DETAIL	
	SCALE: NTS	DRAWING NO: A
	DRAWN BY: AWH	
	DATE: APRIL 2020	

TREE WATERING BAG

INSTALL 57 LITER SLOW RELEASE WATERING BAG ON ALL CALIPER CONIFEROUS TREES.

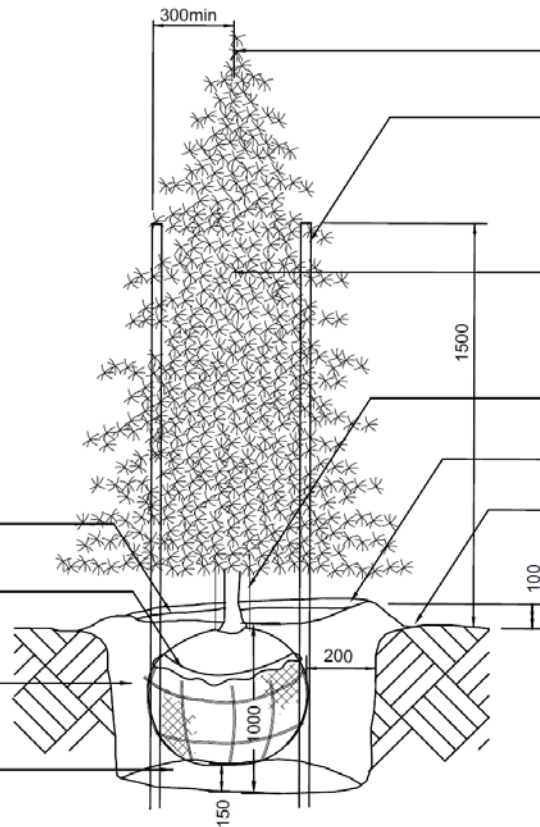
TREE TO BEAR SAME RELATIONSHIP TO GRADE AS PREVIOUS PLANTING

MIN. 100mm DEEP SHREDDED BARK MULCH

CUT AND REMOVE 1/3 OF BURLAP AND TWINE

APPROVED NATIVE BACKFILL MATERIAL

UNDISTURBED SOIL



PRUNE ONLY DISEASED OR DAMAGED LIMBS, DO NOT CUT LEADER

2440 LONG WOOD STAKES (TYP.) ATTACH TO TREE WITH NO. 14 GALV. WIRE ENCASED WITH RUBBER GARDEN HOSE AT POINT OF CONTACT WITH TREE

NOTE: STAKES ARE NOT TO BE DRIVEN THROUGH ROOT BALL

FASTEN TRUNK TO STAKES WITH NO. 14 GALV. WIRE ENCASED WITH RUBBER GARDEN HOSE AT POINT OF CONTACT WITH TREE

EXPANDABLE PLASTIC SPIRAL RODENT GUARD, 600mm HIGH.

EARTH SAUCER

FINISHED GRADE



CONIFEROUS TREE PLANTING DETAIL

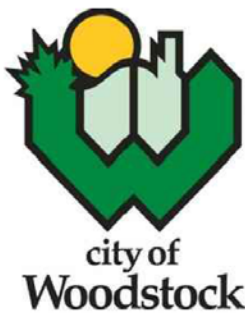
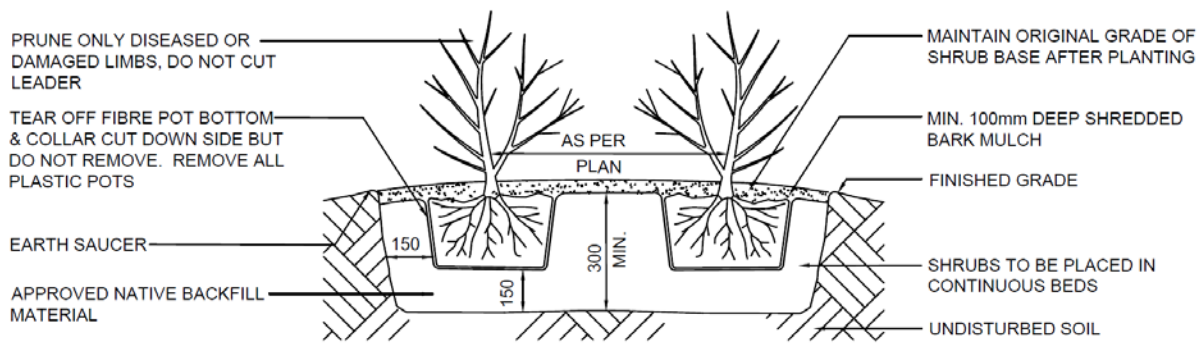
SCALE: NTS

DRAWN BY: AWH

DATE: APRIL 2020

DRAWING NO:

B



SHRUB PLANTING DETAIL

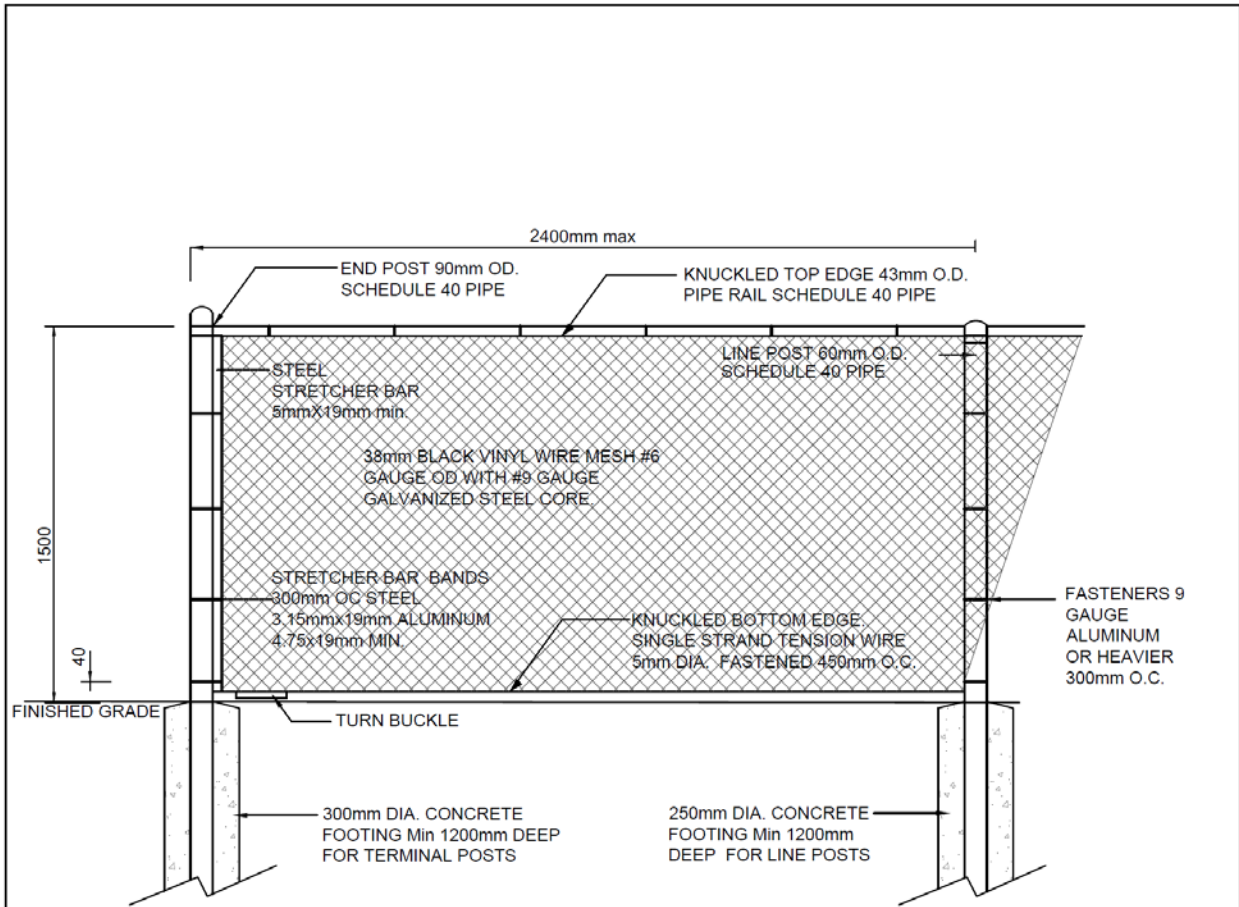
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DRAWN BY: AWH

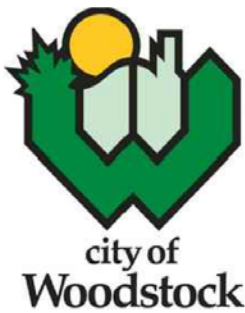
DATE: APRIL 2020

DRAWING NO:

C



NOTE: ALL POSTS, RAILS, CAPS AND HARDWARE TO BE POWDER COATED BLACK



BLACK VINYL CHAINLINK FENCE DETAIL

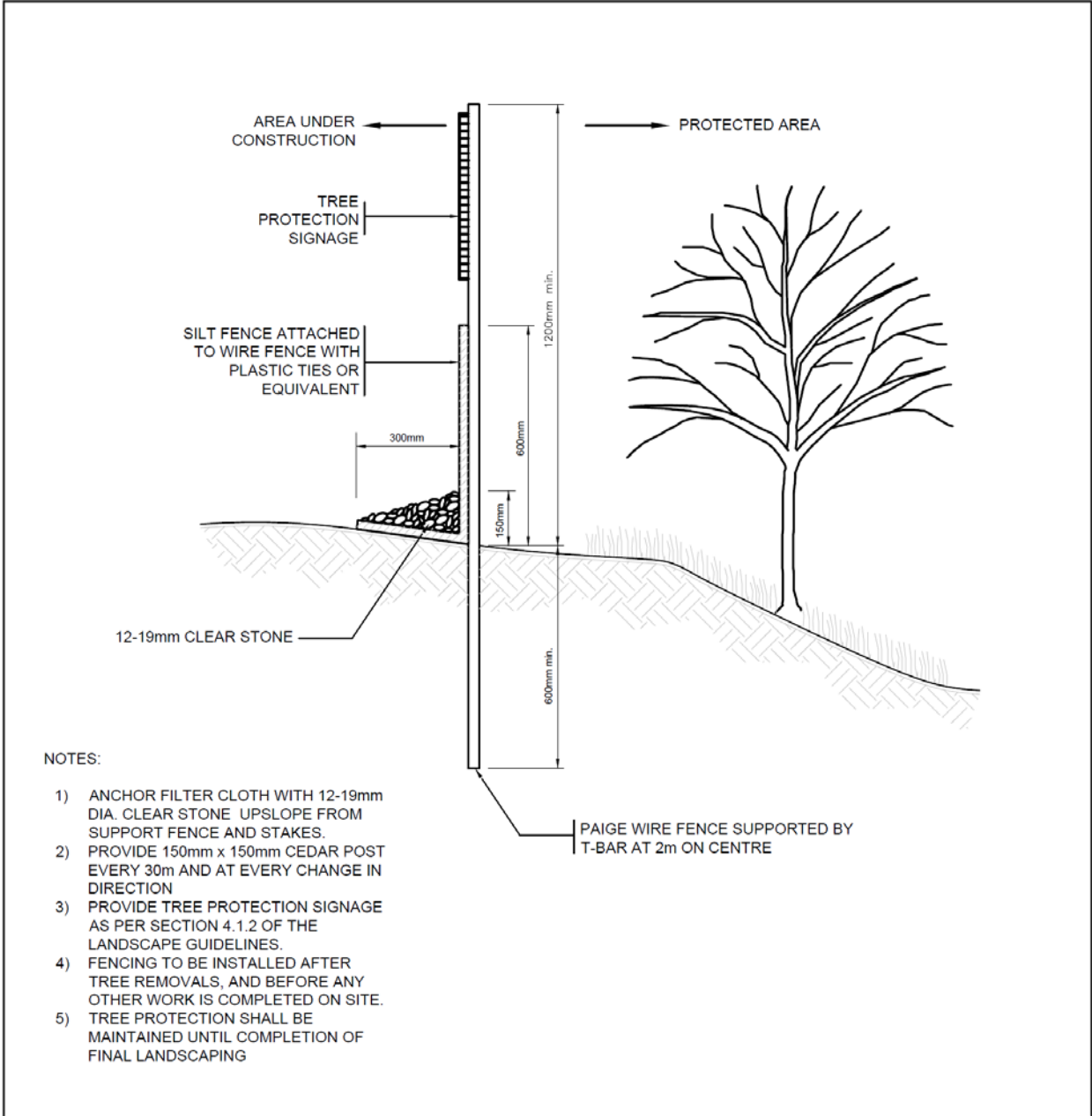
SCALE: NTS

DRAWN BY: AWH

DATE: APRIL 2020

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D

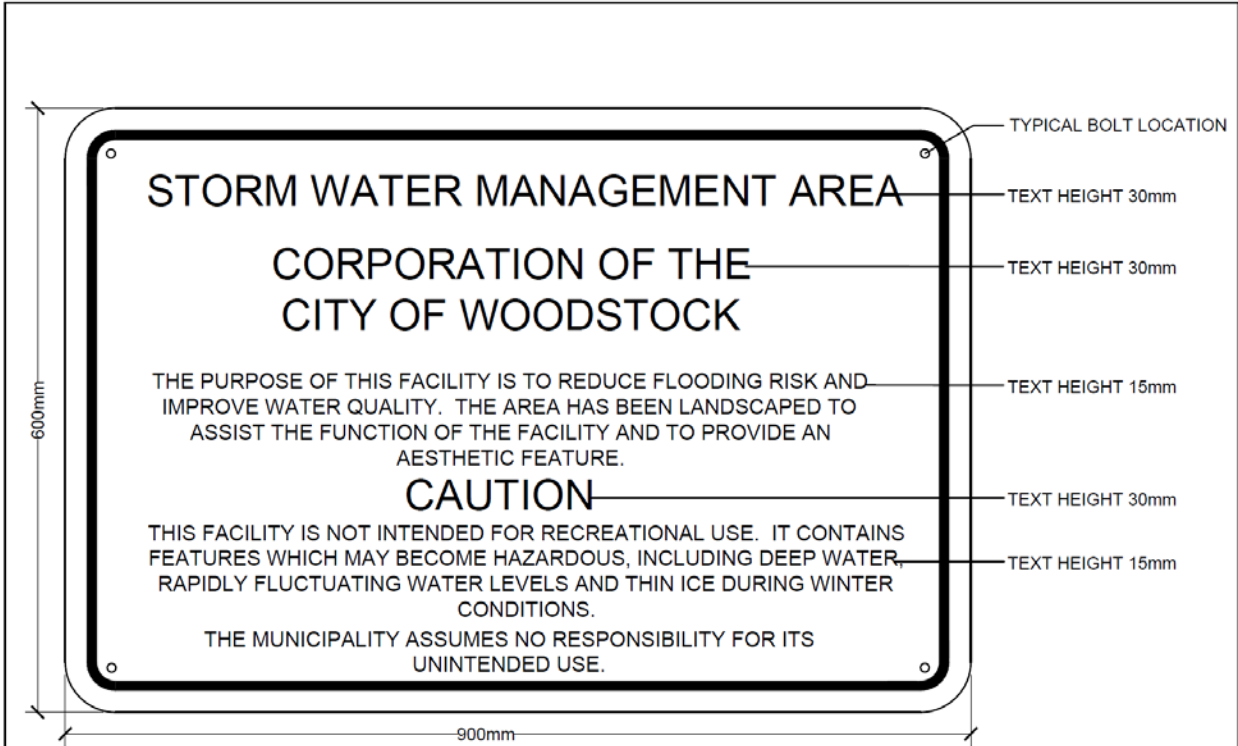


TREE PROTECTION FENCING DETAIL

SCALE: NTS
DRAWN BY: AWH
DATE: APRIL 2020

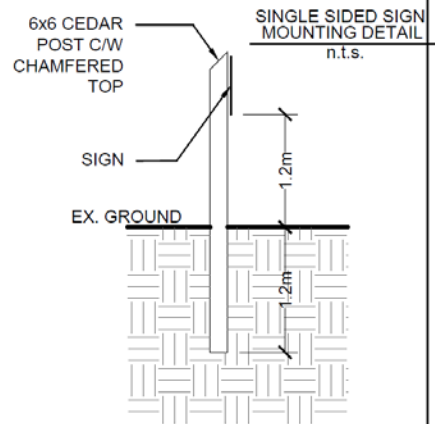
DRAWING NO:

E



NOTE:

1. CONTRACTOR SHALL BE RESPONSIBLE TO SUPPLY AND INSTALL SIGN FACING STREET.
2. CONTRACTOR TO SUPPLY AND INSTALL TWO 6x6 CEDAR POSTS PER SIGN (MINIMUM 3.0m LONG) WITH 1.2m IN GROUND AND 1.8m ABOVE GROUND AS PER DETAIL.
3. SIGNS ARE TO BE ATTACHED TO WOODEN POST USING APPROPRIATE GALVANIZED BOLTS WITH TAMPERPROOF NUTS
4. MINIMUM SIGN HEIGHT IS 1.2m FROM THE BOTTOM OF LOWEST POINT OF SIGN TO GROUND.
5. WHITE BACKGROUND AND BLACK LETTERING SHALL BE PAINTED, NO TRANSFERS ALLOWED.
6. 600mm X 900mm ALUMINUM SIGN C/W 38mm (1.5") RADIUS CORNERS AND BOLT HOLES



<h2>STORM WATER MANAGEMENT SIGNAGE</h2>	
SCALE: NTS	DRAWING NO:
DRAWN BY: AWH	F
DATE: APRIL 2020	