

LANDSCAPE AND DESIGN GUIDELINES



2022

TOWNSHIP OF WOOLWICH

TABLE OF CONTENTS

INTRODUCTION.....	5
1.0 URBAN DESIGN GUIDELINES FOR THE PUBLIC REALM	6
1.1 General Design Principles	6
1.2 Design Guidelines for Roads	8
Collector Roads	8
Collector Road I (with Median)	8
Collector Road II	9
Single Loaded Collector Roads	9
Local Roads.....	10
Lanes	10
Green Streets	11
Traffic Circles/Roundabouts	11
1.3 Guidelines for Parks and Open Spaces	12
Natural Heritage Features	12
Township Wide Park.....	12
Community Parks	13
Neighbourhood Parks.....	13
Parkettes.....	14
1.3 Guidelines for Pedestrian & Cycling Trails Network	15
1.4 Guidelines for Storm Water Management Facilities.....	16
2.0 DESIGN GUIDELINES FOR THE PRIVATE REALM	18
2.1 All Development.....	18
Development Blocks and Lots	18
Built Form.....	19
Location of Buildings with Respect to Roads and Open Space	20
2.2 Guidelines for Residential Buildings	20
Single Detached & Semi-Detached Houses.....	20
Townhouses/Live Work Units.....	21
Apartment Buildings	22
2.3 Residential Buildings – Architectural Features and Details	23
Porches and Entry Features.....	23
Utilities and Mechanical Equipment	23
Garages.....	24
Front Garages	24

LANDSCAPE and DESIGN GUIDELINES

Rear Yard Garages 24

Driveway Treatments 25

2.4 Guidelines for Public/Institutional Buildings 25

2.5 Guidelines for Commercial/Mixed Use Buildings 26

2.6 Design Guidelines for Lighter Industrial Employment Land, Commercial, and Business
Park Designations 28

Buildings 28

Gateways 28

Loading and Parking 28

Landscaping 29

Private Realm Landscape Guidelines 29

2.7 Design Guidelines for Large Scale/Heavy Industrial, Employment Land 29

Buildings 29

Loading and Parking 30

Outdoor Storage 30

Landscaping 30

**3.0 SITE PLAN GUIDELINES FOR MULTI-RESIDENTIAL, COMMERCIAL AND
EMPLOYMENT/INDUSTRIAL LAND USES 31**

3.1 Urban Design 31

3.2 Lighting 31

3.3 Other Site Elements 32

3.4 Vehicle Access and Circulation 33

3.5 Pedestrian Access and Circulation 33

3.6 Landscaping 34

General requirements 34

Streetscape and Perimeter Landscaping 36

Internal Landscaping 37

Snow Storage 38

Garbage Facilities 39

Off-street Parking Spaces 39

Bicycle parking spaces 40

Electric Vehicle (EV) Charger Parking Spaces 41

Loading Spaces 42

Road Widening 42

Road Entrances 42

Storm water Management Plans 42

Accessibility 42

Fire Reservoirs 42

Fire Routes 43

Screening 43

4.0	STREET TREES – SUBDIVISION AND CONSENT (NEW LOTS)	43
4.1	Guidelines	44
4.2	New Planting: Standards and Specifications	44
	Tree Planting	45
	Street Tree Planting Design Submissions	46
	Street Tree Planting Plan	46
4.3	Street Tree Planting Details	47
	Urban Tree Location	47
	1) Lot Width Considerations	49
	2) Curb to Property Line Considerations	50
	3) Utility Conflict Considerations	50
	4) General Requirements/ Considerations	50
	Street Tree and Parkway Design	51
	Dealing with Conflicts	54
	Rural tree Locations	54
4.4	Guidelines for demarcation and tree planting	55
4.5	Natural Area Restoration	55
4.6	Tree Preservation	55
4.7	Tree retention and replacement	55
	Purpose statement	55
	Scope	56
	General procedure	56
	Tree Protection Zone	58
	Tree protection permit and or agreement - authorization from the Township	58
5.0	SUBDIVISION BOULEVARD AND ROUND-A-BOUT STANDARDS	64
	Sidewalks	64
	Boulevard	64
	Round-a-bout/ traffic circles/ cul-de-sac islands	64
6.0	PARKLAND DESIGN AND DEVELOPMENT REQUIREMENTS	64
6.1	General Requirements	65
6.2	Pre-development Condition of Parkland	65
	6.2.1 Topsoil Stripping and Grading	66
	6.2.2 Co-ordination of Services	66
	6.2.3 Park Fencing	68
	6.2.5 Securities and Acceptance	68
	6.2.6 Park Construction by Developer	68

LANDSCAPE and DESIGN GUIDELINES

6.2.7 Park Construction Timing 69

6.2.8 Park Construction Budgets 69

6.3 Requirements for Park Design Plans 70

6.3.1 Park Design and Facility Development 70

6.3.2 Park Concept Plan and Facility Fit 72

6.3.3 Construction Drawings 73

6.4 Design & Construction Standards 75

6.4.1 Sustainable Design 76

6.4.2 Public Safety by Design 76

6.4.3 Design for Accessibility 76

6.4.4 Site Grading and Drainage 77

6.4.5 Setbacks to Facilities 78

6.4.6 Athletic Field Facilities 78

6.4.7 Playgrounds 79

6.4.8 Hard Surface Play Courts 80

6.4.9 Water Spray Features 81

6.4.10 Seating Areas 81

6.4.11 Parking Areas 81

6.4.12 Pedestrian Walkways 82

6.4.13 Tree Planting 83

7.0 SUBDIVISION LOT AND BLOCK DEVELOPMENT 84

Appendix A Recommended Street Tree Planting List 86

LANDSCAPE AND DESIGN GUIDELINES

TOWNSHIP OF WOOLWICH

INTRODUCTION

The Township seeks to achieve communities with well designed and high-quality public and private realms. The Plan is premised on achieving a more compact and connected community, and includes measures to ensure:

- a standardized and highly interconnected pattern of lotting for development blocks;
- consistent built form and pleasing streetscapes;
- safety, accessibility and comfort in the pedestrian environment;
- promotion of development that is compatible with the existing community and respectful of its heritage context;
- achievement of an overall density that is appropriate for the surrounding context, considerate of Provincial and Regional requirements, and consistent with the overall growth management strategy of the Township of Woolwich; and,
- support for a variety of transportation modes including transit services, walking, and cycling in the Breslau community.

The purpose of these Design Guidelines is to provide design principles and specific guidelines for both the public and private sectors. While they are intended as a reference, they indicate the Township of Woolwich's expectations with respect to the character, quality and form of development. These guidelines also provide the Township staff with an objective, consistent evaluation framework to assess development applications.

1.0 URBAN DESIGN GUIDELINES FOR THE PUBLIC REALM

The public realm comprises public roads, municipal open spaces/parks/other green spaces, storm water management facilities and other public use activity areas. Further, it is the intent of these Guidelines to link the major components of the public realm with a connected system of sidewalks, pedestrian, other trails and bicycle paths.

This section of the document provides general guidance for the design of the major components of the public realm. These Guidelines are to be read in conjunction with the policies of the each area Settlement Plan.

1.1 General Design Principles

1. To promote safety and security in public places, including roads, parks and open spaces, schools, public transit routes and the public use activity areas of buildings, the following measures are necessary:
 - the design and siting of new buildings shall provide opportunities for visual overlook, and ease of physical access, to adjacent roads, parks and open spaces;
 - clear, unobstructed views to parks and open spaces shall be provided from the adjoining roads;
 - appropriate signage and lighting, visibility and opportunities for informal surveillance shall be provided for primary walkways, parking lots, garages and outdoor amenity areas; and,
 - public use activity areas located within buildings shall be located at-grade and oriented to the public road.

2. To ensure ease of access for the pedestrian and the enjoyment of public roads and other outdoor spaces, the following measures are necessary:
 - public spaces and activity areas, including building entrances, terraces and porches, should be oriented toward public roads;
 - encourage the provision of public art in public spaces and activity areas;
 - provision of a consistent and/or complementary level of streetscape design, incorporating such elements as appropriate paving, planting, fencing, lighting and signage; and,
 - avoiding the location of building service areas, mechanical equipment and/or ventilation systems in pedestrian areas. To ensure the road network and the road rights-of-ways facilitate all modes of transportation in a highly interconnected and logical manner, the following measures are required:
 - provide an interconnected grid of arterial, collector and local roads and associated public open spaces that organize development, that is pedestrian friendly, is highly connected and supports transit;
 - ensure that the road pattern establishes development blocks of appropriate size and geometry that achieve an orderly pattern of development and visual diversity;
 - provide adequate access for vehicles, pedestrians and bicycles, opportunities for vistas, view corridors and pedestrian amenity areas, and space for utilities and services;

- design all streetscape elements such as paving patterns, seating, and signage, to be consistent and complementary to the character of the surrounding neighbourhood community at large;
- design street lighting with regard for vehicular and pedestrian requirements so that the size, height, and style of lighting reflect the hierarchy of the road; and,
- locate all utilities underground. Where components of utilities must be located above ground, they should be located either in a rear lane or along the street tree planting line to minimize clutter and disruption of the road's character



Residential units define the street edge



A residential road with street trees



Utilizing lanes for more than garage access.



Greening laneways

1.2 Design Guidelines for Roads

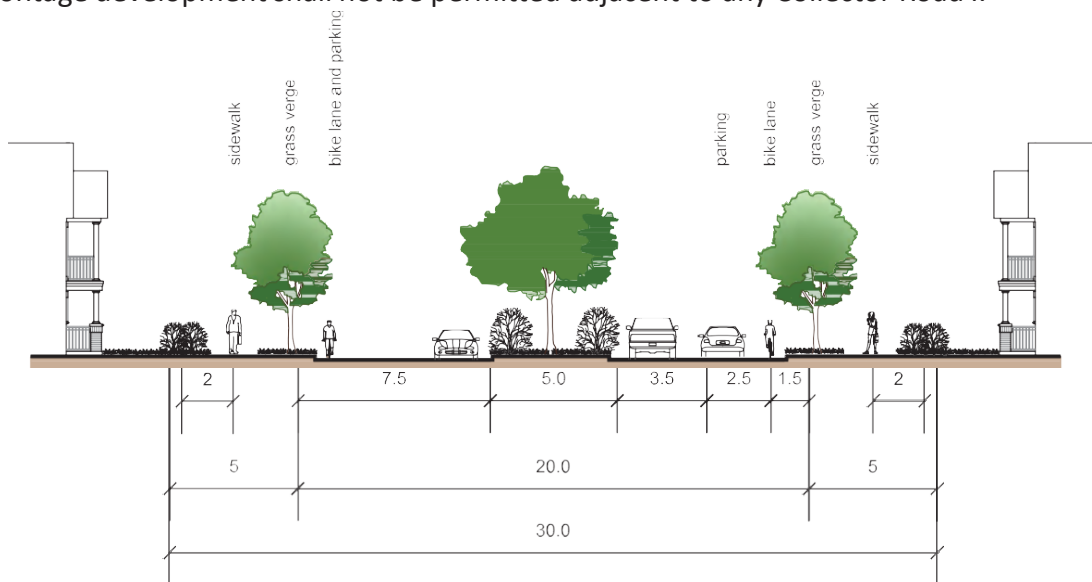
Regional Roads are primarily transportation facilities, providing through routes for vehicles, pedestrians and cyclists through Breslau and across the Township of Woolwich. Access to property can be permitted although the number, design and location of access points will be controlled so that the service to adjacent land does not detract from the primary function of moving the various modes of transportation.

Collector Roads

Collector Roads are intended to carry traffic between Highway 7 and other Collector Roads within the network. Through traffic will be discouraged from using these roadways. Limited access to properties abutting these roadways will be permitted. Collector Roads will generally have a minimum right-of-way width of between 30.0 metres and where these roads are single loaded, abutting the Natural Heritage Framework, a right-of-way width of approximately 23.0 metres.

Collector Road I (with Median)

1. Collector Road I with a median shall have a right-of-way width of 30.0 metres.
2. The road surface, including a median, a shared parking/cycling lane in each direction shall be 20.0 metres.
3. Boulevards on both sides of the pavement area shall be 5.0 metres and will include a grass verge, street trees and 2.0 metre sidewalks on both sides.
4. A centre median shall be 5.0 metres. It will include street trees, shrubs and ground covers.
5. Transit facilities may be accommodated on any Collector Road I.
6. Individual direct access to any development site abutting a Collector Road I shall be limited to minimize disruptions to traffic flow and to maximize safety and the attractiveness of the road.
7. Buildings that abut a Collector Road I with medians shall present a façade with architectural detailing and landscape feature that address the road frontage. Reverse frontage development shall not be permitted adjacent to any Collector Road I.



Collector Road I

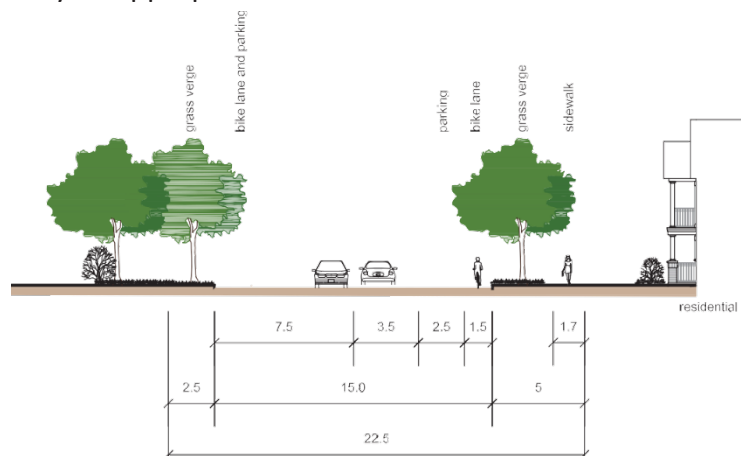
Collector Road II

1. Collector Road II shall have a right-of-way of 23.0 metres.
2. The road surface, including parking lanes on both sides of the road shall be 12.0 metres.
3. Boulevards on both sides of the pavement area shall be 5.5 metres and will include a grass verge with street trees and 2.0 metre sidewalks on both sides.
4. Individual, direct access from a Collector Road II is permitted subject to municipal requirements.
5. Transit facilities may be located on any Collector Road II.
6. Buildings that abut Collector Road II shall present a façade with architectural detailing and landscape features that address the road frontage. Reverse frontage development shall not be permitted adjacent to any Collector Road II.
7. Individual, direct access from a Collector Road II is permitted subject to municipal requirements.
8. Transit facilities may be located on any Collector Road II.
9. Buildings that abut Collector Road II shall present a façade with architectural detailing and landscape features that address the road frontage. Reverse frontage development shall not be permitted adjacent to any Collector Road II.

Single Loaded Collector Roads

Single Loaded Collector Roads are an attractive component of any community, providing visual and physical access to the Natural Heritage Framework. In order to promote the inclusion of single-loaded roads a reduced boulevard may be appropriate.

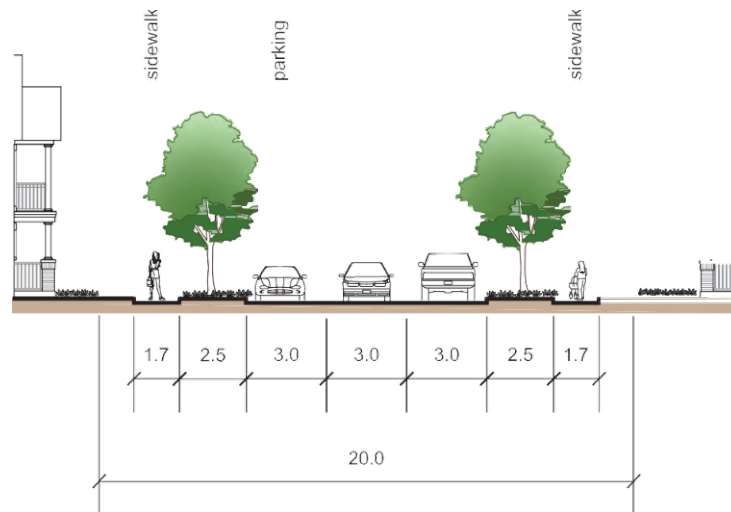
1. Where a Single Loaded Collector Road abuts a publicly owned storm water management feature, open space, parkland or an environmental feature, the boulevard that abuts the publicly owned lands may be reduced.
2. For any Single Loaded Collector Road, the boulevard width on the side of the green lands feature may be reduced from 5.0 metres to 2.5 metres, reducing the overall right-of-way required by 2.5 metres.
3. Transit facilities may be located on any Single Loaded Collector Road.
4. Individual direct access to any development site shall be limited to minimize disruptions to traffic flow and to maximize safety and the attractiveness of the road.
5. Buildings and lots that abut a Single Loaded Collector Road, shall present a façade with architectural detailing and landscape features that address the road frontage. Reverse frontage development shall not be permitted adjacent to any Single Loaded Collector Road.



Local Roads

Local Roads serve predominantly residential neighbourhoods and provide connections to the Collector Roads System, and often provide links to and between neighbourhood public spaces.

1. Local Roads should be designed with a right-of-way width of 20.0 metres.
2. The road surface, including a parking lane on one side of the road (that could alternate to both sides of the road) shall be a maximum of 9.0 metres.
3. Boulevards on both sides of the pavement will accommodate a grass verge with street trees and 1.7 metre sidewalks on both sides.
4. Individual direct access onto Local Roads is permitted subject to municipal requirements.
5. Buildings that abut Local Roads shall present a façade with architectural detailing and landscape features that address the road frontage.
6. Local Roads that are single loaded may include a 17.5 metre right-of-way, and a reduced boulevard abutting the publicly owned storm water management feature, open space, parkland or an environmental feature.
7. The Township may consider narrower Local Road rights-of-way, subject to a review of their sustainability by the Engineering Department.

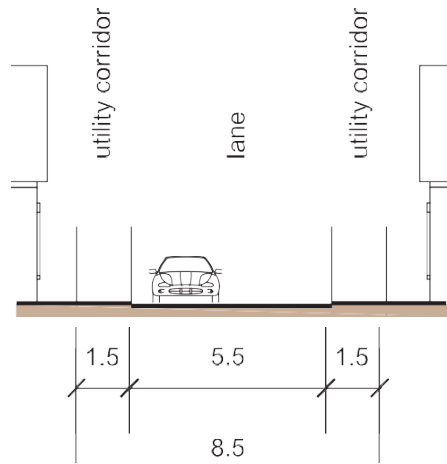


Lanes

Lanes provide access to private garage facilities. Where the use and location of lanes is acceptable to the Township, the following general design requirements should be considered:

1. Lanes may be considered for use in situations where garages and driveways fronting directly on a road will detract from the character of a special location, such as along Arterial Roads and/or a Collector Road.
2. Lanes shall have a right-of-way of 8.5 metres.
3. The road surface shall be 5.5 metres and shall include a 1.5 metre utility corridor on either side of the lane.

4. The use of permeable materials shall be encouraged in lane construction in areas where sufficient drainage exists.



Laneway

Green Streets

Green Streets serve a special function in the community in that they provide for increased permeability and pedestrian connections within the community. They are meant to encourage pedestrian travel through neighbourhoods and/or open space features and are desirable features in themselves. They are unpaved rights-of-way, that have buildings facing onto them.

1. Green Streets can only be implemented in combination with a rear Lane.
2. Green Streets should have a maximum right-of-way width of 18.5 metres.
3. Green Streets should have two 1.5 metres sidewalks with space on both sides to accommodate a double row of trees.
4. Green Streets will be mainly sodded with enhanced landscaping adjacent to residences to reinforce the special character of these roads and encourage pedestrian activity.
5. Green Streets can accommodate underground utilities as well as emergency access.

Traffic Circles/Roundabouts

Traffic Circles are intended to calm traffic and direct traffic flows without necessarily requiring stop signs at intersections. The open spaces created in the traffic circles add to the character of neighbourhoods.

1. Whenever Traffic Circles/Roundabouts are used they should be treated as significant landscape features in the public realm, as well as serve traffic calming devices.

LANDSCAPE and DESIGN GUIDELINES

2. The design of a Traffic Circle/Roundabouts shall ensure ease of snow removal and maintenance.
3. The minimum radius for a Traffic Circle/Roundabouts should be in accordance with Table 1 below:

Intersection	Inscribed Circle Radius (i.e. outside circle dimension)	Radius of Inside Circle (at Mountable Apron)	Turning Road Width
Local-Local	12	6	6
Collector-Local or Collector-Collector	15	8	7
Collector-Single Lane	20	12	8
Arterial	27.5	18.4	9.1

1.3 Guidelines for Parks and Open Spaces

The Parks and Open Spaces System is a major functional and aesthetic component of a community and should be designed to provide for a distribution of amenity spaces for a range of users, in a linked network. The Parkland Design and Development Requirements outline features and details to be provided for new parks, along with the requirement for a Park Fit Plan and such details should be referenced at the time of park design in addition to the guidelines below.

Natural Heritage Features

1. The Natural Heritage Framework shall be protected and integrated into the community parks and open space system.
2. The Natural Heritage Framework should, where appropriate and possible, be physically and visually accessible from the abutting roads.
3. Where appropriate the Natural Heritage Framework should be expanded to link to parks and other open spaces. Where necessary, indigenous and ecologically complementary planting guidelines should be developed and implemented by the Township.

Township Wide Park

1. Are provided a required to meet special community-wide needs and serving Township-wide functions such as major indoor and outdoor recreation complexes.
2. Are intended to serve as unique destination points drawing residents from the Township-wide urban and rural populations, as well as visitors from beyond the Township.
3. Have no defined size but are likely large blocks of land. The size will vary based on the intended program and function of facilities to be included in the park. The size and

locations of such parks will be determined through future studies undertaken by the Township in partnership with community stakeholders.

4. Such parks may contain civic, historical, cultural, recreational and heritage significance.
5. Pedestrian access to parks should be clearly defined using landscaping or architectural elements to ensure an appealing park presence.
6. Park design should ensure visual privacy for adjoining residents.
7. Where fencing is required, the design should be consistent around the perimeter of the park.
8. Street trees should be planted along the edge of parks, while not screening the view into parks.
9. Landscape design should enhance microclimate opportunities (wind, sun, shade etc.) Seating and shade areas should be designed in concert with pathways and play areas.

Community Parks

1. Should be provided at a rate of 1.2 hectares per 1,000 population.
2. Generally, will be between 2 to 8 hectares in size.
3. In smaller settlements, Community Parks are intended to serve the settlement they are situated within as well as the surrounding rural area. In larger urban areas the Community Parks will serve the greater community or a series of neighbourhoods.
4. May contain illuminated sports fields, field houses, indoor facilities and parking.
5. Should front onto a Regional or major local road, with 100 metres of frontage.
6. Where possible, integrated with other institutions, storm water facilities, trails and natural features.
7. Pedestrian access to parks should be clearly defined using landscaping or architectural elements to ensure an appealing park presence.
8. Park design should ensure visual privacy for adjoining residents.
9. Where fencing is required, the design should be consistent around the perimeter of the park.
10. Street trees should be planted along the edge of parks, while not screening the view into parks.
11. Landscape design should enhance microclimate opportunities (wind, sun, shade etc.) Seating and shade areas should be designed in concert with pathways and play areas.

Neighbourhood Parks

1. Neighbourhood Parks are expected to be diverse in scale, function and character.
2. Each Neighbourhood Park is located to perform a particular function within its context. Generally, they are located to be a terminus for street/neighbourhood events, are adjacent to a school and/or are integrated, where possible, with an adjacent natural heritage feature.
3. Neighbourhood Parks will provide opportunities for active and passive recreation for residents within an 800-metre radius (a 10-minute walk). Generally, they may include

LANDSCAPE and DESIGN GUIDELINES

- elements such as play structures, informal playgrounds, seating, hard surface areas, shaded areas under tree canopies or open-air structures, group mailboxes, lighting, distinctive tree, shrub and ground cover planting.
4. Neighbourhood Parks should have significant road frontage. At a minimum, parks shall front on at least two public roads, with continuous frontage of at least 60 metres.
 5. A Neighbourhood Park will generally be no less than 1.5ha of level land and can be as large as 2.0ha where they are designed predominantly for active recreation.
 6. Pedestrian access to parks should be clearly defined using landscaping or architectural elements to ensure an appealing park presence.
 7. Park design should ensure visual privacy for adjoining residents.
 8. Where fencing is required, the design should be consistent around the perimeter of the park.
 9. Street trees should be planted along the edge of parks, while not screening the view into parks.
 10. Landscape design should enhance microclimate opportunities (wind, sun, shade etc.) Seating and shade areas should be designed in concert with pathways and play areas.
 11. All residential units across from parks or adjacent to a park should front onto, not flank onto the park. Rear lotting adjacent to a Neighbourhood Park shall be discouraged



Retaining natural heritage features contributes to sense of place



Housing and pathway adjacent to park



Community mailbox adjacent to a park.



Residential units front directly onto a park

Parkettes

1. A Parkette is a small component of the public open space system, that can be soft surfaced and green or hard surfaced. A Parkette is most likely a park that connects larger pieces of the greenlands system.
2. Parkettes provide an opportunity to close gaps within the natural heritage system shall be dispersed throughout the community. They are expected to provide key connecting links and enhance the overall greenlands system. Parkettes can also be associated with areas of high pedestrian activity, such as within Mixed-Use and/ or retail areas.

3. Parkettes should be located on visible road frontages and their entries should be clearly defined through landscape treatment and built form elements.
4. Design should provide a focal area or feature that gives character and provides for a range of passive and informal uses.
5. Pathways within Parkettes should connect to pedestrian sidewalks and trails within broader community system.
6. View corridors terminating at a Parkette should be highlighted through landscape treatment and/or built form elements.
7. Plant material and construction materials for Parkettes should contribute to the distinctive character of the local communities.
8. Community mailboxes and information boards should be considered in Parkettes.
9. All residential units across from Parkettes or adjacent to Parkettes should front, not flank the park. Rear lotting adjacent to a Parkette shall be prohibited.



Street trees enhance the visual appearance of the Park



Neighbourhood parkette



Parkettes create spaces for people to gather.

1.3 Guidelines for Pedestrian & Cycling Trails Network

1. The trails network includes trails within natural features, storm water management facilities, open spaces and parks and the road system, sidewalks and bicycle paths.
2. Trail design and type will be based on each site's sensitivity in order to minimize environmental impacts.
3. Where site conditions allow, trails for pedestrians and cyclists combined shall be 2.4 metres wide. Pedestrian-only-trails shall be a maximum of 2.0 metres wide. Sidewalks shall be a minimum of 1.7 metres wide, or as identified in the road cross-sections.

LANDSCAPE and DESIGN GUIDELINES

4. Where appropriate, trails are to be designed to accommodate a range of users and abilities. Steep slopes over 4% (between 5% and 8%) and/or needing to be hard surfaced should be avoided. Curb-cuts will be provided to improve access at road crossings. The use of permeable materials shall be encouraged in trail construction in areas where sufficient drainage exists. Where slopes are greater than 4%, hard top surfaces may be used.
5. Where possible and appropriate, trails should be clearly signed regarding permitted use. Wayfinding signage shall be provided throughout the trail network and must follow Ont. Reg. 413/12 Accessibility Standards.
6. Trails should be designed to reflect safe passage and restrict access to private neighbourhood properties.
7. If needed, items such as benches, waste receptacles, lighting, bicycle racks and natural or built shade structures should be provided at trail heads and at regular intervals along the route. Generally, night time usage of trails is discouraged.
8. Where appropriate, trails located in proximity to sensitive natural features, or adjacent to storm water management facilities should incorporate interpretive signage at various locations to promote stewardship initiatives that will protect and enhance the features and functions of the natural environment.
9. Cycling facilities may be located within the road right-of-way where possible but shall be appropriately demarcated and/or separated from the asphalt by a landscaped buffer.
10. Where trails intersect with motorized vehicle infrastructure or roads, clear signage and safety features will be provided for the safety of both the trail user and motorized vehicle user.



Trails provide opportunities for recreation

1.4 Guidelines for Storm Water Management Facilities

1. Storm water management facilities will be key features within the community contributing to the appearance and ambience, while achieving functional objectives related to storm water flow moderation and water quality.
2. Native species and flood tolerant water's edge plants, including a mixture of herbaceous and woody vegetation, shall be planted to stabilize banks of ponds. The perimeter of the permanent pool shall be planted with emergent, strand and submergent species to improve the aesthetics and enhance the performance of the facility.
3. Ponds are envisioned to blend with the natural landscape, therefore, geometric forms and standard slope gradients will be avoided in favour of organic shapes and landform grading designed to replicate natural landforms in the area. Inlet and outlet structures will be concealed using a combination of planting, grading and natural stone.

4. Where there is a need to discourage public access to areas around the perimeter of the ponds, living fences and barrier planting will be utilized in place of fencing. Barrier planting will be comprised of multiple rows of predominantly thorn bearing shrub species planted at a spacing of 0.6 to 0.9 metres contingent on species. Barrier planting will be installed along the crest of steep slopes, adjacent deep-water areas and around inlet and outlet structures.
5. Ponds will not be fenced, but rather will be designed with trails, overlooks and interpretive signage so that they are an integral part of the greenlands system and trails network.
6. Public walking/cycling trails should encircle ponds and extend along storm water channels, where possible.



A pedestrian/cycling trail adjacent to a pond



Pond enhancing natural landscape

2.0 DESIGN GUIDELINES FOR THE PRIVATE REALM

The private realm within the Township is comprised of the built form development blocks and lots and their relationship to open spaces and roads with respect to their location. The residential, institutional and commercial/mixed use buildings within a community contribute to its character and can assist in further defining and complementing the public realm.

This section of the document provides general guidance for the design of built form and how it should address the streetscapes and open spaces. These Guidelines are to be read in conjunction with the policies of the Breslau Settlement Plan.

2.1 All Development

Development Blocks and Lots

1. Developable lands should be subdivided into a series of development blocks, defined by a highly interconnected grid, or modified, system of public roads and lanes.
2. The size and configuration of each development block will:
 - be appropriate to its intended use;
 - facilitate and promote pedestrian movement; and,
 - provide a sufficient number and, where appropriate range of building lots to achieve cost effective and efficient development.
3. Each development lot in a block will:
 - have frontage on a public road or private road within an approved plan of condominium; and,
 - be of sufficient size and appropriate configuration to accommodate development that reflects the planning and urban design policies and these Design Guidelines.
4. A lot that does not have frontage on a public road may be permitted, provided the front lot line adjoins public open space (i.e. a "Green Street") fronting a public road, and the rear lot line adjoins, and has access from a rear lane.
5. Mixed-use development blocks having substantial frontage on an Arterial Road and/or a Collector Road, may be permitted to have a second access to parking from either an Arterial Road and/or a Collector Road provided:
 - the block contains a comprehensively designed development;
 - the principle access to the required service areas on the block is from the exterior side yard,
 - the need for a second access to parking can be demonstrated to be necessary to facilitate the development pattern, but will not interfere with, or promote unsafe traffic and pedestrian movement; and,
 - the development pattern is otherwise consistent with the provisions of the any approved secondary plan and these Design Guidelines.

Built Form

1. A full range of housing types and tenures should be provided to make a variety of housing options available to the community.
2. The design of built form shall incorporate principles of sustainable development, energy and resource efficiency.
3. Architectural styles of individual units and blocks should be sensitive to and complement each other.
4. A variety of architectural elements such as entry porches, dormers, material detailing should be employed to create a distinctive character for each block.
5. New development will be compatible with adjacent and neighbouring development by ensuring that the sighting and massing of new buildings does not result in undue adverse impacts on adjacent properties particularly regarding adequate privacy conditions for residential buildings and their outdoor amenity areas.

To ensure that building compatibility is achieved, the implementing zoning by-laws will establish consistent relationships between buildings and their associated property limits.

6. For reasons of public safety and convenience, primary building entrances to principle buildings shall be clearly visible and located on a public road or onto public open spaces.
7. Access from sidewalks and public open space areas to primary building entrances shall be convenient and direct, with minimum changes in grade, and shall, for required spaces, conform with Provincial and municipal policies.
8. To minimize disruptions to traffic flow and to maximize safety and the attractiveness of Arterial Roads and the Collector Roads, individual direct vehicular access shall be minimized, and, in some cases prohibited.
9. To enhance the quality and safety of the public streetscapes the construction of parking lots/structures which occupy significant proportions of the at-grade frontage of public roads shall not be permitted.



Residential built form frames the park



Landscaped median features provide visual interest in the streetscape

10. To reduce the impact of surface parking and to provide at grade amenity areas, the provision of structured parking shall be encouraged for higher density forms of development. Where it is not feasible to locate parking in structures either below or above grade, parking should be located to the rear of principle buildings and/or within the side yard.

Location of Buildings with Respect to Roads and Open Space

1. To reinforce the road, lane and block pattern, the following measures will be employed:
 - all buildings will be aligned parallel to a public road;
 - buildings will be located in proximity to the property line adjoining the public road;
 - siting and massing of buildings will provide a consistent relationship, continuity and enclosure to the public roads;
 - buildings located adjacent to, or at the edge of parks and open spaces will provide opportunities for overlook into the open space;
 - the massing, siting and scale of buildings located adjacent to, or along the edge of a park or open space will create a degree of enclosure or definition appropriate to the type of open space they enclose; and,
 - buildings of significant public use or architectural merit may be sited to specifically differ from the surrounding urban fabric in order to emphasize their importance as landmarks.



Buildings adjacent to naturalized areas should relate to the open space



Pairing of driveways minimizes their impact on the street

2.2 Guidelines for Residential Buildings

Single Detached & Semi-Detached Houses

1. Buildings must have front and exterior side façades parallel to the road with front doors, windows and entry features facing the road to create a consistent street wall.
2. The setback to the main building face should be from 4.5 to 7.5 metres from the edge of the right-of-way. The setback to a main building face, which could be the main front wall, second floor room over or beside the garage, or significant element such as a roofed porch or verandah.
3. Garages shall be set behind or flush with the main building face or accessed from a

rear lane. In the case of houses with a double car garage and double-wide driveway, the garage doors facing a public road, shall be set back a minimum of 6 metres from the road right-of-way. This guideline does not apply to Public Lanes.

4. Houses with a one-car garage and single width driveway, should provide a driveway length that could accommodate two mid-size cars between the garage and public road curb.
5. Corner lots and homes facing, or abutting parks are priority lots within the neighbourhood. The design of these homes shall include the following considerations:
 - where sides or flankage of buildings are visible, they should have windows, materials, and other architectural treatments equal to the front elevation of the house;
 - the main front entrance should be located on the exterior side elevation, corner windows and wrap-around porches should be included to emphasize a corner location; and
6. Porches, stairs, canopies and other entrance features can encroach into the required setbacks.
7. Entry features and other architectural elements shall be incorporated into the front elevation of the house to reduce the visual dominance of the garage and the front drive.
8. Shared or grouped driveways will be encouraged to reduce the amount of asphalt on front yards.
9. Windows should vary in design to distinguish individual units within a block while creating a uniform image.



Semi-Detached unit with recessed covered garage



Variation in roof configuration creates diversity on streetscape

Townhouses/Live Work Units

1. The siting, massing, and façade design of Townhouse units shall be coordinated on a block-by-block basis.

LANDSCAPE and DESIGN GUIDELINES

2. The elevation of the Townhouse block shall be articulated in a manner that provides variation between units and reinforces common characteristics that visually unites the block.
3. Variety in the design of roofs is required to break up the massing of Townhouse blocks.
4. The massing and built form of Townhouse units adjacent to single/ semi-detached dwellings shall be broken down with architectural elements to promote visual integration.
5. Where appropriate, garages may be accessed from a rear public Lane. Where they are not, garages should be paired to allow for more substantial front yard green space. Garages shall not protrude beyond the main front wall of the dwelling unit.
6. Townhouse built form will be limited to a maximum of 8 units, with 6 units preferred. Where 8 units are proposed, individual unit widths should not exceed 6.5m.
7. Townhouses should be dispersed and integrated throughout new developments rather than being concentrated in one location within a subdivision.
8. Where the Townhouse is designed as a Live Work unit, the unit shall have frontage on a Collector Road, with the work space component comprising the front of the at-grade floor.



Townhouses with garages on rear lane road



Apartment building oriented to public

Apartment Buildings

1. Apartment buildings should be oriented to front, face and feature the public road. A substantial portion of the building should front the public road at a minimum setback.
2. Entrances should be located and oriented to public roads.
3. Permanent parking, loading and service areas should be located in side or rear yards and set back from the front façade of the building.
4. A visitor drop-off area should be located at the front of the building.
5. Rooftop mechanical equipment should be screened with materials that are complementary to the building.

2.3 Residential Buildings – Architectural Features and Details

Porches and Entry Features

1. Porches on detached units shall be deep enough to allow a seating area (a minimum of 1.5m, although a 1.8m depth is encouraged).
2. Where railings are used, they should be consistent with the character of the house. Maintenance-free, pre-finished railings with a range of colours preferably in a natural colour palette, with at least two colours considered.
3. The porch width is encouraged to encompass the entry door and windows on the front façade of the unit.
4. Porch steps shall be detailed in the same material as the porch itself. Wood steps are not permitted.
5. Entry features shall be articulated through detailing and/or a variation of materials.
6. An exposed frieze detail is required at the top of the support columns on the underside of the porch roof soffit.



Utility meters should be recessed and hidden from view



Entries create “Eyes on the street”

Utilities and Mechanical Equipment

1. On interior lots utility meters are encouraged to be limited to the side elevation of dwellings and coordinated between units to generate consistency. Landscaping as a means of screening meters is encouraged.
2. Where meters are located on side elevations of lots flanking streets, parks, or other highly visible locations the meters should be placed at an inconspicuous location, recessed and treated with an architectural surround or screened by landscaping, where

permitted by utility company standards.

3. Air conditioning units, vents for dryers, exhaust fans, etc., shall not be located on any elevation facing the street.

Garages

The design of garages can have a major impact on the visual character of the individual dwelling and the collective streetscape. Therefore, the design and material of attached garages should complement, not dominate, the main dwelling to create a cohesive streetscape.

Builders are responsible for ensuring that all relevant provisions of the Township of Woolwich's Zoning By-law are met, including minimum setbacks and permitted driveway widths.

Builders are encouraged to provide a variety of garage types including attached front garages, detached garages and lane-based garages. In addition, plans for both single and double car garages should be prepared to provide for a varied streetscape.

Front Garages

1. Attached garages must be a natural extension of the design, massing, and materials of the main dwelling.
2. Where the building face, including the porch/veranda, make up less than 4.5m of width, the dwelling face or porch/veranda is encouraged to extend a minimum of 1.5m closer to the street line than the garage portion.
3. A second storey, built over the garage, should be setback a maximum 2.5m from the front face of the garage. In addition, the area built over the garage should cover approximately of 75% of the garage width. Exceptions will be made on a limited basis subject to review by the Township or the Township approved Control Architect.

Rear Yard Garages

Garages can be located in rear yards by means of a driveway running the depth of the lot to the rear yard or by means of a driveway from a flanking street on corner lots. Garages can be detached or attached to the dwelling.

1. A rear yard garage is possible on lots with a minimum depth of 30m, with the following lot width:
 - A single-car garage is possible on lots with a minimum lot width of 11.0m;
 - A detached double-car garage is possible on lots with a minimum lot width of 12.2m; and,
 - An attached double garage is possible on lots with a minimum lot width of 15.2m.



Example of a detached laneway garage

Driveway Treatments

1. For individual driveway access, on units with double car garages, the maximum width of a driveway shall be as per Township standards.
2. Driveways should be located as far as possible from parks, open space features, public walkways, schools and intersections.
3. Where three car garages are present, the driveway should be tapered to a width of 6.5m at the curb.

2.4 Guidelines for Public/Institutional Buildings

Public/Institutional uses form an important aspect of community identity. Buildings serving these uses act as important built landmarks. Careful attention must be paid to the design of these structures to ensure that they reflect the built quality and integrate with the scale of the surrounding neighbourhood.

1. Public/Institutional buildings shall be sited prominently and where possible, should terminate views.
2. Public/Institutional buildings shall front on Collector Roads, or in some cases on Arterial Roads, and be located close to the road to reinforce the street wall and define intersections.
3. Public/Institutional buildings shall exhibit a high standard of architectural design and reflect the scale and character of surrounding neighbourhoods.
4. Special landscape features are encouraged to distinguish important landmark buildings at the pedestrian level.
5. Public/Institutional buildings shall be designed as special landmark buildings with high quality design, materials and finishes. The site should be well landscaped in recognition of their prominent locations and status as landmark buildings.
6. The front door of all Public/Institutional buildings shall be easily accessed and connected with a walkway to the sidewalk on the road.

LANDSCAPE and DESIGN GUIDELINES

7. Vehicular parking shall be located at the side or rear of the building. Parking for cyclists should be located near building entrances and where visual surveillance can be maximized.
8. Drop-off areas should be provided for buses and cars at the side of the building but may be located in the front of the building subject to building design and site plan considerations.
9. Consideration for a road lay-by should be given for buses and cars.
10. Rooftop mechanical equipment shall be screened with materials that are complementary to the building or through parapet height where applicable.



School reinforcing the road edge



Projecting entry and tower element emphasize the main entrance

2.5 Guidelines for Commercial/Mixed Use Buildings

1. Retail/commercial uses will be encouraged at the ground level and office commercial and residential uses are encouraged on the upper levels of buildings.
2. Both the residential and commercial components of buildings should be of quality construction and architectural details and should respond to neighbouring structures in massing, height and materials.
3. The side and rear of buildings abutting low to medium density residential properties should be of similar height as the residential dwellings or should be stepped to maintain an appropriate scale in relation to adjacent residential uses.
4. Buildings should be oriented to front, face and address public roads, especially with buildings located at corners.
5. Building façades along the public roads should be articulated with colour, material variations, windows and other treatments of the wall plane to provide a high quality of design, detail, and variety. The design treatment of flanking façades visible from the road should be similar to that of the front façade.
6. All façades that overlook roads and open spaces should have windows. Reflective mirror glass should not be used for windows at grade.
7. Building façades should be treated as pedestrian areas and public spaces:
 - pedestrian areas in front of the buildings should be wide and well-landscaped with furniture, lighting and planting;
 - tree planting should be carefully planned with signage to avoid conflicts;
 - canopies should be considered to provide weather protection to pedestrians; and,
 - planting should be in large continuous planting beds.

8. Building entrances should be prominent and linked to sidewalk through walkways, covered porches or hard-surfaced patios/ parkettes.
9. Ground level floor-to-floor height should allow for conversion from residential to commercial uses.
10. The front yard could be either hard or soft surface, depending on use and should include a low, visually permeable fence at the edge of the sidewalk to define the semi-private areas and to add continuity to the streetscape.
11. A variety of roof shapes should be considered to avoid the monotony of flat roofs.
12. All utility equipment, rooftop mechanical equipment, hydro transformers and garbage storage facilities shall be incorporated into the design of a building. If this is not possible, equipment should be positioned so as not to be visible from the public road and screened with materials that are complementary to the building design.
13. Parking areas should be designed in small sections and include lighting, substantial landscaping, and special paving to break up expanses of parking and to provide places for pedestrian connections.
14. Trees, shrubs and ground covers should be planted at grade in wide, continuous planting beds that serve to define pods of parking and provide the preliminary pedestrian circulation.
15. Parking areas should be screened from view from roads, open spaces and adjacent residential areas with low fencing and planting.
16. Parking areas should be located at the side or rear of the development and set back from the road right-of-way.
17. Servicing and loading areas should be located behind buildings and be screened from view. Conflicts between shipping vehicles and pedestrians must be minimized through signage and delineation of the pedestrian right-of-way.
18. Signage should provide a high level of clarity, visibility, and visual interest and shall complement the architecture of the building(s) in its scale, materials, consistency, and design.



Examples of mixed use building with retail/commercial uses on ground floor

2.6 Design Guidelines for Lighter Industrial Employment Land, Commercial, and Business Park Designations

Buildings

1. Building façades along the public streets shall be articulated with colour, material variations, windows and other treatments of the wall plane to provide a high quality of design, detail and variety.
2. The design treatment of flanking façades visible from the road shall be equal to that of the front façade.
3. Windows shall be encouraged on all façades that overlook streets and open spaces; reflective mirror glass shall not be used for windows at grade.
4. Entrances to buildings shall be prominent and visible with entrance canopies, awnings and other architectural elements.
5. Rooftop mechanical equipment shall be screened with materials that are complementary to the building.

Gateways

1. Buildings located at the entry road from Highway 7 is identified as a Gateway and should be designed to include landmark buildings with consideration to minimizing setbacks, special landscape treatment, streetscaping, and unique building treatment.
2. The massing and design of buildings at the identified Gateways should indicate the importance of the location. This includes higher buildings, higher roofs and unified architectural detailing. In addition, no parking shall be permitted between the building and the public street right-of-way.
3. To facilitate the construction of the identified Gateways, partnerships among the Township, developers and/or service clubs shall be encouraged.

Loading and Parking

1. Loading and service areas should not be located at the front or exterior side of the buildings.
2. Loading and service areas should be screened from view from the street, public open spaces and adjacent residential areas.
3. Parking areas should be located at the side or rear of the building and set back from the street right-of-way.
4. Parking areas should be designed in small sections and include lighting, substantial landscaping, and special paving to break up expanses of parking and to provide places for pedestrian connections.
5. Parking areas should be screened from view from streets, open spaces, and adjacent residential areas with low fencing and planting.
6. Runoff from parking lot areas that are prone to higher levels of contamination should be conveyed over land, where possible, to biofilters or swales and, where required, to storm sewers and storm water management ponds.

Landscaping

1. The front yard setback should be landscaped to define pedestrian walks, outdoor employee lounge areas, the main building entrance and to screen parking areas.
2. Planting should visually enhance individual sites, screen parking and loading areas while enabling views of buildings and create a consistent landscape treatment along streets.
3. Landscape design shall relate to the architecture of the building with particular attention to entrances and windows, architectural massing, rhythm, detailing and sightlines.
4. Buffer planting should consist of a mix of indigenous evergreen and deciduous plant species of a suitable height and configuration to provide a visual screen between adjacent properties during all seasons.
5. Trees, shrubs and groundcovers should be planted at grade in wide, continuous planting beds that serve to define pods of parking and provide the preliminary pedestrian circulation.

Private Realm Landscape Guidelines

1. Provide a variety of plant material including perennials, shrubs, coniferous and deciduous trees, and groundcovers with a hardiness zone rating of at least 5b.
2. Provide a diversity of plant species that are chosen for their ecological compatibility.
3. Choose plant material that is appropriate for the site conditions (soil, micro climate etc.).
4. Choose plant material for seasonal variety, drought tolerance and salt tolerance.
5. Locate plant material to conserve energy and modify temperature and wind extremes.
6. Plant material shall be regionally grown and conform to the Canadian Standards for Nursery Stock.
7. Trees must have a minimum caliper of 50 measured at 150 mm above the stem flare.
8. Trees must be balled and burlapped.
9. Shrubs must be container grown.
10. Exotic or non-native species, which are considered evasive, shall not be used.

2.7 Design Guidelines for Large Scale/Heavy Industrial, Employment Land

Buildings

1. Building façades along the public streets should be articulated with colour, material variations, windows and other treatments of the wall plane to provide a high quality of design, detail and variety.

LANDSCAPE and DESIGN GUIDELINES

2. Entrances to buildings should be prominent and visible with entrance canopies, awnings and other architectural elements.
3. Rooftop mechanical equipment shall be screened with materials that are complementary to the building.

Loading and Parking

1. Loading and service areas should not be located at the front of the buildings.
2. Parking areas should be screened from view from any adjacent residential areas with fencing and planting.
3. Runoff from parking lot areas that are prone to higher levels of contamination should be conveyed over land, where possible, to biofilters or swales and, where required, to storm sewers and storm water management ponds.

Outdoor Storage

1. Outdoor storage areas that face public streets should be avoided. Where site planning constraints necessitate outside storage in visually prominent locations, they should be screened with architectural elements and/or berms and/or landscaping.

Landscaping

1. Planting should visually enhance individual sites, screen parking and loading areas – while enabling views of buildings – and create a consistent landscape treatment along streets.
2. The front yard setback should be landscaped to define pedestrian walks, outdoor employee lounge areas, the main building entrance and to screen parking areas.
3. Landscape design shall relate to the architecture of the building with particular attention to entrances and windows, architectural massing, rhythm, detailing and sightlines.
4. Buffer planting should consist of a mix of indigenous evergreen and deciduous plant species of a suitable height and configuration to provide a visual screen between adjacent properties during all seasons.
5. Trees, shrubs and groundcovers should be planted at grade in wide, continuous planting beds that serve to define pods of parking and provide the preliminary pedestrian circulation.

3.0 SITE PLAN GUIDELINES FOR MULTI-RESIDENTIAL, COMMERCIAL AND EMPLOYMENT/INDUSTRIAL LAND USES

Commercial, Industrial, Institutional, Recreational and Multi-Residential Development (greater than 3 units) within the Township of Woolwich is subject to Site Plan Control. This includes new buildings and structures, but also includes any additions, site alterations or increase of the size or usability of the site (as per Section 41 of The Planning Act).

Through Site Plan Control the municipality requires site plan agreements to include conditions such as, but not limited to, road widening, landscaping, parking and loading facilities, curbing, garbage facilities, etc.

“Development” means development as defined by the Provincial Policy Statement and the Township Site Plan Control Bylaw.

The Township has prepared this outline to assist applicants in understanding the site plan approval process, the information required for site plan approval, Township standards, and to identify appropriate contact persons.

3.1 Urban Design

The design guidelines in Section 2 must be reviewed and addressed for any development. Any applications for site plan must include brief outlining how the applicable sections of Section 2 above have been addressed.

3.2 Lighting

1. Provide a comprehensive photometric Lighting Plan for the site, and especially the parking lot areas. Lighting should create an identity for the parking lot, enhance adjacent streets and pedestrian environments and be appropriate to the location, context and scale of the areas being lit.
2. All lighting shall be installed to ensure that all outdoor lighting is directed downward and shielded so as not to project beyond the Owner’s land nor to cause a glare that would impact adjacent properties or passing traffic
3. Select different luminaries with a coordinated appearance to light pedestrian pathways, parking spaces, drive aisles, building and site entrances and other relevant parking lot features.

4. Balance the need for safety and security with the reduction of energy consumption and light pollution:
 - a. ensure all parking spaces and circulation routes are well-lit;
 - b. install lighting that is appropriately scaled to its purpose, i.e. avoid “over lighting”;
 - c. dark sky compliance;
 - d. direct light downward and shall not overspill on adjacent properties, streets and open spaces, or cause a glare on adjacent roads; and
 - e. use energy-efficient fixtures and bulbs
5. Provide pedestrian-scaled lighting, such as bollards or lower-scale pole fixtures along pedestrian routes.
6. Consider lighting elements for their aesthetic and design value, not simply their lighting function or ease of maintenance.
7. Coordinate the location of lighting with pedestrian clearways, tree planting and other landscaping.

3.3 Other Site Elements

The following site elements should be considered and included where appropriate.

1. Integrate bicycle parking, EV charger/EV charger ready parking spaces, horse and buggy parking, shopping cart corrals, ticket or payment kiosks, signage, public art, and other applicable site elements into the design and layout of the parking lot. Indicate the location of these elements on the Site Plan.
2. Sustainable storm water management by maximizing the natural infiltration and retention of rainwater through site development. Consider permeable pavement, rainwater harvesting, bioretention systems, green roofs and other technologies. Indicate in the covering letter how sustainable storm water management has been addressed through the current proposal.
3. Structures related to site elements, such as bicycle parking, horse and buggy parking, or shopping carts, should incorporate sustainable materials and technologies whenever possible.
4. Provide at least 0.6m clearance between parked bicycles and adjacent walls, poles, landscaping, street furniture, drive aisles and pedestrian clearways and at least 1.5m clearance from vehicle parking spaces.
5. Provide Horse and buggy parking, being 2.5 metres wide by 9 metres in length for combined parking, or 2.5 by 6 metres if a separate horse barn is used.
6. Where shopping carts are associated with parking lot use, position cart corrals so that each row of parking has access to a cart return area. note: Shopping cart corrals are encouraged to extend the width of two parking rows and incorporate landscaping to buffer adjacent parking spaces.

7. Explore opportunities for public art. Examples of public art opportunities in parking lots might include enhancement to the street edge, screening, a marker of the entrance or exit, or a focal point sculpture.

3.4 Vehicle Access and Circulation

1. Limit the number and width of curb cuts for street access driveways to minimize interruption to the public sidewalk, streetscape and perimeter landscaping. (refer to the applicable access Management Guidelines for driveway requirements)
2. Provide access to surface parking lots from secondary streets or laneways whenever possible.
3. Share driveway access between adjacent sites where feasible.
4. Define street access driveways and internal vehicle routes with curbed landscaped areas, tree planting and lighting.
5. Size vehicle circulation routes according to use. Avoid using over-sized driveways, drive aisles and turning radii. note: Limiting the width of driveways and drive aisles reduces the expanse of parking areas and provides more opportunity for soft landscaping. Minimizing turning radii reduces the length of pedestrian crossings and encroachment into landscaped areas. Driveway well defined with landscaping and decorative lighting.
6. Where circulation routes require wider driveways and turning radii (i.e. fire lanes, service areas), coordinate the location of these routes with major drive aisles.
7. Provide continuous circulation throughout the site. avoid dead end driveways and turn around spaces.
8. Ensure unobstructed motorist and pedestrian sight distance and provide clearly marked crossings at all intersections between vehicle routes and pedestrian pathways.

3.5 Pedestrian Access and Circulation

1. Establish a direct and continuous pedestrian network within and adjacent to parking lots to connect building entrances, parking spaces, public sidewalks, transit stops and other pedestrian destinations.
2. Provide at least one pedestrian route between the main building entrance and the public sidewalk that is uninterrupted by surface parking and driveways.
3. In larger parking lots or where parking lots serve more than one building or destination, provide designated pedestrian pathways for safe travel through the parking lot.

4. All pedestrian routes within a parking lot should include:
 - a. a barrier-free pathway, with a minimum clear width of 1.7m (wider pathways are encouraged and may be required depending on parking lot use), along with curb cuts/appropriate grade level crossings;
 - b. shade trees (or a shade structure) along one or both sides of the pathway;
 - c. pedestrian-scale lighting to illuminate and define the route; and
 - d. a clear division from vehicular areas, with a change in grade, soft landscaping and a change in surface material,
5. Consider installing “tables” (rolled curbs bordering slightly elevated crossings) at major internal intersections to serve as a traffic calming feature and provide pedestrian priority.
6. Where pedestrian routes cross street access driveways and other major drive aisles, clearly mark crossings and provide unobstructed sight distance for both pedestrians and vehicles.

3.6 Landscaping

General requirements

- a) Retain and protect existing trees, vegetation, natural slopes and native soils and integrate these features into the overall landscape plan.
- b) Distribute landscaping throughout the site to soften and screen parking lot edges, reinforce circulation routes, create pleasant pedestrian conditions and maximize shade and storm water benefits.
- c) Consolidate soft landscaped areas, particularly in larger parking lots, to enhance tree and plant material growing conditions.
- d) Landscaped areas should be designed to accommodate the following:
 - a. trees planted with access to good quality soil with a depth of 0.7m, trying to achieve between 10m³ and 15m³ of good quality soil;
 - b. trees planted at least 1.5m from curbs, sidewalks, driveways and other hard surfaces to buffer from stress caused by salt, snow piling, vehicle overhang and compacted soils;
 - c. all other plant material, except sod or groundcover, set back a minimum 0.6m from any curb edge to protect from vehicle overhang and mechanical damage; and
 - d. high-branching, deciduous shade trees planted evenly at no more than 10metre intervals (or as appropriate to the selected species) to quickly establish continuous canopy coverage.
- e) Expand rooting zones of landscaped areas under adjacent hard surfaces. note: Techniques may include the use of structural soils or cells, continuous planting trenches and/or permeable paving.

- f) Select plant material that is suitable to the growing environment of the parking lot:
 - a. use species (native and non-native) that are hardy, drought- and salt-tolerant, and resistant to the stresses of compacted soils and weather exposure;
 - b. include suitable native species where possible and appropriate;
 - c. use native species adjacent to natural areas, or appropriate cultivars. Native species should be those found in the feature or found in other such features across the Region;
 - d. avoid monocultures which can be susceptible to disease, ensuring that no one species exceed 45% of the total planting;
 - e. consider sun, shade and irrigation requirements; and
 - f. incorporate a variety of deciduous and coniferous trees and shrubs for year-round interest, texture, shape and seasonal colour,
- g) Consider installation of a permanent irrigation system in all landscaped areas. Where possible, collect rainwater from rooftops and other surfaces for plant irrigation.
- h) Identify hose bibs, sprinkler outlets, storage reservoirs, and other applicable irrigation elements on the Landscape Plan. Locate valves and other maintenance controls in discrete, yet accessible areas.
- i) Where landscaping might impact motorist/ pedestrian sight distance, keep shrubs below 0.75m in height and prune trees so that the lowest branches will be at least 2m above ground level. Limit any other landscape features that might cause obstructions to a maximum height of 1m.
- j) Ensure overhanging branches of trees or shrubs adjacent to pedestrian pathways maintain a clear headspace of at least 2m.
- k) Coordinate tree planting with the location of light standards and other utilities.
- l) Choose plant material for season variety, drought tolerance and salt tolerance.
- m) All sod to conform to the Canadian Nursery Sod Growers Specifications.
- n) Locate plant material to conserve energy and modify temperature and wide extremes.
- o) All plant material to conform to the Canadian Nursery Trades Association Specifications and Standards.
- p) Hedges or Shrubs used to form hedges shall be of a non-deciduous species, shall be a minimum of 24 inches in height above grade at the time of planting and shall be spaced not more than 36 inches apart and maintained so as to form a continuous visual screen 30 inches in height above grade, under normal growing conditions, within one year of planting.

- q) Grassed areas shall be of a species normally grown as a permanent lawn in Southern Ontario. Grass areas may be sodded, plugged, sprigged, or seeded except that solid sod shall be used in swales or other areas that are subject to erosion.
- r) Trees shall be balled, burlap or container grown stock. Bare root stock is not permitted.
- s) Tree and shrub installations – Install as per the attached tree planting specification. Grow base and container including synthetic burlap shall be completely removed from the root ball prior to planting. All twin or wire shall be cut off from around the truck at the top of the root ball. Trees and shrubs shall be mulched to a minimum depth of 2 inches with organic mulch at least to the perimeter of the root ball.
- t) Minimum acceptable sizes for plant material are:
 - a. Deciduous trees 50mm caliper, 3 to 3.5 metres in height;
 - b. Coniferous trees 1.5 metres in height;
 - c. Shrubs 60cm high.

Streetscape and Perimeter Landscaping

- a) Provide Street trees as appropriate
 - a. Coordinate location of the street trees with above and below ground utilities.
 - b. Provide an average of one tree for every 12metres of frontage to be considered for planting.
 - c. Specify high branching trees with a minimum of 1.8-metre-high clearance from the ground.
 - d. Tree species are to be acceptable for planting along the public roads
 - e. Township staff are to be consulted before final planting to verify locations in the field.
- b) In certain circumstances the Township may accept cash-in-lieu of planting of the street trees.
- c) Perimeter tree planting, being planting on site but around the edges of the site, is to be provided above and beyond any required plantings in the interior of the site (i.e., such as in landscape islands and parking areas).
- d) Provide a landscaped area at least 2m in width between surface parking and all property lines. Consult the applicable Zoning By-law for additional setback requirements.
- e) Edge treatments along streets and other public spaces should visually screen parked vehicles, but not completely obstruct views into and out of the parking lot for the purpose of supporting pedestrian safety and security.
- f) For parking lot edges adjacent to streets, parks or other public open space, provide the following:
 - a. at least one row of shade trees, spaced evenly at no greater than 10metre intervals (or as appropriate to the selected species) for the length of the parking lot edge

- b. screening, consisting of continuous planting, alone or in combination with a low decorative fence/wall or a landscaped berm. Typically, keep shrubs, fences or walls to a maximum height of 1m note: The location, design and character of the screening should fit in with and enhance the existing landscape and built form character of the street or public open space.
- c. a coordinated appearance with the existing or planned streetscape treatment
- g) Set back screening at least 1m from the edge of public sidewalks and 0.6m from parking lot curbs. Screening should not encroach into the public street right-of-way.
- h) For parking lot edges not adjacent to the public realm, provide soft landscaping with a variety of deciduous and coniferous trees and plantings. Include bio-retention or other storm water management systems as appropriate.
- i) Use native species adjacent to natural areas, or appropriate cultivars. Native species should be those found in the feature or found in other such features across the Region
- j) Install high-quality privacy fencing with landscaped screening between parking lots and neighbouring, less compatible uses.
- k) Where possible, include landscaping and a pedestrian walkway between parking lots and building edges.

Internal Landscaping

- a) Incorporate soft landscaped areas and trees within the parking lot to define major vehicle and pedestrian routes, provide shade and break-up the expanse of paved areas. note: Soft landscaped areas include islands, medians, bio-retention areas and other consolidated planting areas.
- b) all soft landscaped areas should contain suitable growing medium and be sized and designed to support healthy trees and plants (refer to section 4.4.1 and appendix B). Consolidate smaller landscaped areas to provide better quality growing conditions and support for a broader range of tree and plant species.
- c) Define internal landscaped areas with a continuous 15cm curb to prevent damage from vehicles and snow clearance, to separate planting areas from pedestrian pathways, and to prevent soil and other landscape material from spreading over adjacent surfaces. Note: Taller or shorter curbs are permitted where vehicle overhang and door clearances are not an issue. Curb cuts are permitted to support accessibility and storm water initiatives.
- d) Plant high-branching deciduous trees throughout the parking lot interior to provide shade for pedestrians, vehicles and surfaces.

- e) Provide internal shade trees at a ratio of one tree planted for every five parking spaces supplied. Where the tree ratio is not achievable:
 - a. A reduced number of trees with hard surface treatments such as white concrete, should be considered for use throughout the development to reduce heat islands; and/or,
 - b. distribute internal shade tree planting such that no parking space is more than 30m from a tree.

Note: perimeter shade tree planting areas adjacent to the parking area can be counted in the tree ratio.

- f) Regardless of e) above, alternative surface treatments that are more environmentally friendly are supported and encouraged.
- g) Include landscaped islands at the beginning and end of each parking row and to break up longer rows or highlight special features:
 - a. provide a minimum growing environment of 15m³ (at 0.9m depth) of good quality soil (see appendix B) note: This typically results in a landscaped area at least 3.5m wide for end-of-row islands and 3m wide for mid-row islands
 - b. plant at least 1 high-branching deciduous shade tree (2 preferred) in each island
 - c. include understory planting, such as shrubs, perennials, ornamental grasses and groundcover
- h) Provide continuous landscaped medians every 3 (or fewer) banks of parking.
 - Note: a “bank” of parking consists of 2 parking rows and a drive aisle.
- i) Rows of parking should not exceed 25 spaces. Rows should be broken with a landscape island.
- j) Medians should have a landscaped area at least 3m in width and combine with shade tree planting requirements, pedestrian pathways and/or storm water management as appropriate.
- k) Shade structures may replace shade tree planting, only after the minimum interior tree requirement is satisfied or when sufficient soil volume and planting conditions cannot be achieved for proper tree growth.

Snow Storage

- a) Snow storage areas should be identified on the Site Plan and Landscape Plan and have a minimum dimension of 2.6m by 1.5m to accommodate snow piling from a typical plough blade.
- b) Provide snow storage areas away from public streets and other areas where motorist/pedestrian sight distance and continuous landscape screening are essential.
- c) Sodded areas or portions of landscaped areas may be identified for snow storage with plant material selected accordingly.
- d) Where overflow parking or bio-retention areas are provided, these areas may be used for snow storage.

- e) Hard surfaced areas used for snow storage are encouraged to retain snowmelt on-site.
- f) Ensure overland flow routes and storm water inlets and outlets are clear of debris and snow piling.
- g) Consider methods to reduce the use of salt on site, including alternative surface treatments that may reduce the use of salt, and regular plowing versus salting, or use of sand.
- h) Where applicable, a salt management plan shall be provided, and recommendations implemented.
- i) All agreements require that if snow storage becomes insufficient it must be removed from the site within 24 hours.
- j) Snow storage areas must be located where they will not reduce the number of required parking spaces, will not impact on any sight lines or adjacent properties and will not infringe on any functioning of the development.

Garbage Facilities

- a) Where street-side garbage pick-up is not provided or used and where indoor garbage storage will not be maintained the development must include a central garbage collection facility.
- b) That if the garbage facility is located outdoors, it shall be identified on the site plan.
- c) Garbage facilities shall be installed in the location shown on the Site Plan.
- d) In urban areas garbage facilities shall be either:
 - a. placed on a concrete pad, enclosed on all sides, including a gate, with a solid wood maintenance free fence, at a height, which is greater than the garbage bin, or
 - b. decorative molok(s),
- e) In rural settings, garbage facilities must be hidden or to the rear and shall have a lockable lid, that is kept locked unless in use.
- f) Garbage facilities shall not occupy or interfere with a required parking or loading space,
- g) Garbage facilities shall be maintained an acceptable state for the life of the development.
- h) Truck turning to access the garbage facilities are to take place on the property.

Off-street Parking Spaces

- a) The number required spaces shall be based on use as per the Township Zoning By-law,
- b) Minimum parking space and driveways shall be as per the Township Zoning By-law,
- c) Accessible parking space requirements as required by the Township Zoning By-law,
- d) Parking areas to be asphalt (although gravel may be acceptable in some cases),
- e) Aisle widths must also conform to the Township Zoning By-law,

- f) Paved or concrete parking areas must be painted to mark each spaces or areas where parking is not permitted,
- g) All parking areas shall be designed to prevent damage to vehicles, or to improvements including: walls, fences, plantings and light fixtures,
- h) For parking spaces adjacent to the end of row with no exit and a 1.5-metre-deep hammer head is required.
- i) Continuous concrete curbs will be required to define parking areas/entrances. Where gravel surfaces are used portable concrete curbs or other means to delineate each space in such a manner that is acceptable to the Township may be permitted.
- j) Handicapped/barrier free spaces must be signed as such,
- k) Parking should be provided in a manner for safe access from the parking areas to the building,
- l) Parking within industrial areas is not be located next to outdoor storage areas, loading docks, and truck turning areas, being areas where there is a potential for damage to the vehicles from site operations,
- m) Parking areas shall generally not be within a fenced area.

Bicycle parking spaces

- a) Bicycle parking
 - a. Long-term bicycle parking also known as “bicycle parking space–occupant” includes bicycle racks in an enclosed, secured area with controlled access; or Individual, secure enclosures like bicycle lockers;
 - b. Short-term bicycle parking also known as “bicycle parking space–visitor” includes bicycle racks in an easily accessible location; Available for public use; Sheltered or unsheltered.
 - c. Although there are a wide variety of design strategies that can be used to implement good quality bicycle parking there are some criteria that should be satisfied:
 - i. Accessibility:
 - ii. Close to building entrances
 - iii. At ground level or accessible from ground level (i.e. by ramps, elevators). No obstacles like stairs or steep slopes Separate, dedicated bicycle ramps into parking areas are desirable.
 - iv. Located in a well-lit area
 - d. Units should be made from high quality materials (metal) and firmly secured to the ground, floor, or wall.
 - e. Good quality rack designs will provide the following:
 - i. Two points of contact between the bicycle and the rack. This allows both the frame and at least one wheel to be locked to the rack and supports the bicycle.
 - ii. Space-efficiency Racks should allow a good number of bicycles to be parked in a small area while providing adequate space between bicycles to facilitate parking and locking.

- iii. A minimum distance of 2.5 m. from any fire hydrant, entrance or loading area
- iv. Distance between rack and wall, or other obstacle:
 - 1. Minimum 0.45 m if bikes parked parallel to obstacle;
 - 2. Minimum 2.5 m if bikes parked perpendicular to obstacle and rack has double-sided access;
 - 3. Minimum 0.6 m if bikes parked perpendicular to obstacle and rack has single-sided access (side facing wall would not accommodate bicycles).

Examples of good quality bike racks



Racks to be avoided



Electric Vehicle (EV) Charger Parking Spaces

- a) EV or EV Charger ready parking spaces are recommended. EV charger ready means that the duct work has been installed from the building electrically panel room to the proposed parking spaces. The following should be considered:
 - i. If spaces are adjacent to a building, charger and charger equipment cannot block or impact the use of any sidewalk;
 - ii. Provide space for the charger and 0.6m to 0.9 metres around the charger area for access.
 - iii. Spaces should be signed accordingly once operational.

- iv. The spaces should blend in with the other parking spaces on site.

Loading Spaces

- b) Loadings spaces must be provided as per the zoning by-law.
- c) All truck turning movements must take place on the property.
- d) Truck turning movements may need to be shown on the site plan to ensure proper access to the site, that movements can take on the site, and proper egress can take place.

Road Widening

- a) Where development is proposed on lands adjacent to a Township Road which does not meet the required road width the Township will require the dedication of a road widening to bring the Township Road up to the required width.
- b) Where required, a daylight triangle may be required to be dedicated.
- c) All costs incurred from such road dedication (i.e. surveying and preparation of legal documents including deeds for the conveyance) is the owners responsibility.
- d) For development on Regional Roads and Provincial Highways the appropriate agencies may require road widening / daylighting triangles as per their respective requirements.

Road Entrances

Must be designed to the appropriate standard and access permits will be required from the appropriate agency (i.e. Township, Region, Province).

Storm water Management Plans

- a) Storm water management plans are required as an integral part of the development concept for quality and quantity control. The Township s sustainable storm water management by maximizing the natural infiltration and retention of rainwater through site development. Consider permeable pavement, rainwater harvesting, bioretention systems, green roofs and other technologies. Indicate in the covering letter how sustainable storm water management has been addressed through the current proposal.
- b) Post development flows cannot exceed pre-development flows for the 5, 25, and 10-year storm events.
- c) The analysis and design of storm water management plans must be based on the use of the hydraulic/hydrologic principles by competent consulting engineers (contact the Township’s Engineering and Planning Services Department).

Accessibility

Site layout and design features should give consideration to features for persons with disabilities. This would include items such as varying hard surface treatments, minimizing vehicle and pedestrian conflict, walkway provisions including appropriate connection to municipal sidewalks, ramps, parking spaces in close proximity to the main entrance, etc.

Fire Reservoirs

- a) Where required by Building Code, an appropriately sized reservoir which is accessible by the Fire Department shall be provided and shown on the site plan.
- b) The location and size shall be to the satisfaction of the Township Building Section and Fire Department.
- c) A detail of the design and connections must form part of the site drawings.

Fire Routes

- a) Fire routes shall be identified on the plan and to the satisfaction of the Township Building Section and Fire Department.
- b) The surface treatment of the fire route shall be capable to support a 60,000 lbs truck and shall be signed or identified to the satisfaction of the Fire Chief.

Screening

- a) Off street parking areas, loading areas, accessory trailer parking areas, outdoor storage areas, satellite antenna foundation, waste receptacle areas, and external heating and cooling equipment should be effectively screened from public view (adjacent sensitive properties and or the public right of way, at eye level).
- b) Screening shall consist of a wall or fence, a landscaped screen, landscaped berm or a combination thereof
- c) Walls or fences used as screens should be landscape along the exterior face where possible and appropriate. The height of the wall or fence should be equal to the height of the element being screened.
- d) Roof top elements shall be screened in a manner that eliminates any view of the roof top mechanical from the ground level.
- e) Use of metal siding should match the type and colour of the used on the structure
- f) Wood screening is to be pressure treated.
- g) Galvanized hardware should be painted to blend in with the colour of the building.

4.0 STREET TREES – SUBDIVISION AND CONSENT (NEW LOTS)

Tree planting on the public right-of-way is a long-term initiative, as what is done today can have a serious impact road/tree maintenance activities for years to come. It is therefore imperative that tree planting be done with care and planning.

Planning is critical to ensure that the final product is sustainable and aesthetically pleasing, adding value, enhance the quality of life, provide shade to pedestrians, and provide natural environment in the urban network.

This should be done to minimize impacts to the urban systems (i.e., water, sanitary and storm water systems). Trees of similar shape but different species, if carefully selected, will provide the desired effect of tree arch over the street.

The mix of species (by street or within the street) is essential to reduce the chances of insect epidemics, to guard against the spread of disease as trees are trimmed in efficient block treatments, to prevent widespread neighbourhood complaints and to eliminate extensive tree removal programs when single species planting die (e.g. Dutch Elm Disease on American Elm, Verticillium wilt on Norway Maples).

Any proposed plans (submissions) and planting must be in accordance with the “NEW PLANTING: STANDARDS AND SPECIFICATIONS” provided in the following section.

In general, common sense is required in the planning and planting of trees but several guidelines are provided in the following to ensure problems are reduced.

4.1 Guidelines

All landscape plans must be approved by a member of the Ontario Association of Landscape Architects (OALA).

All concept tree-planting plans for a subdivision:

- 1) Must be approved (stamped) by a qualified Ontario Registered Professional Forester or a member of the Ontario Association of Landscape Architects (R.P.F. or L.A.). The plan is to be submitted to the Municipality for approval. Drawings will be stamped, signed and dated once reviewed and/or approved by the Municipality.
- 2) Are to be shown on the standard plan of subdivision drawing or grading plan, which shows lot dimensions (particularly frontages), and proposed driveway locations as prepared by the consulting engineer.
- 3) The drawing is concept in nature and shows the species of tree on each lot.
 - a. The working detail identifying the actual planting locations, i.e. distance from driveways, hydrants, lights, etc. must be reviewed between the Township and landscaper at the time of tree installation.
 - b. The actual tree locations must be adjusted, deleted or added as the built environment dictates according to the specifications in these guidelines.
 - c. The drawing must include tree-planting detail, tree location with sidewalk or without sidewalk, and general notes with the soil type indicated and a legend indicating tree species on each lot.

After installation of the trees a final “as built” plan shall be provided in both hard copy and geo-referenced ESRI shapefile which shall include the database details on the plantings.

4.2 New Planting: Standards and Specifications

The Township will promulgate and enforce removal, planting, pruning and protection of trees upon the right-of-way of any street, alley, sidewalk, or other public space in the Township of Woolwich.

The specifications are to serve as the standard for planting of all Street Trees. They will apply regardless of whether the actual work is preformed contractually, by Township Staff, or by private individuals. As with many standards applied on a large scale, there will be exceptions. To avoid unnecessary problems or damage to our urban forest, the Township must approve the exceptions.

Tree Planting

- 1) All tree planting shall follow the attached guidelines or “Guidelines for Growing, Installing and Maintaining Healthy Trees”, Prepared by the Illinois Tree Specification Review Committee unless noted differently or otherwise noted in this section.
- 2) Shall include all labour, material and related services necessary to furnish and install all plantings indicated on the Approved Drawings or Approve Contract specifications. The work includes, but is not limited to the following:
 - a. **Furnishing:** providing the plant material, including delivery to site. Making a concerted effort to minimize the time between the plants being dug in the nursery and the actual time of planting.
 - b. **Installation:** installing of the plants listed on the plant list.
 - c. **Mulching:** mulching all trees to a depth of 10 cm. contained in a 10 cm. deep edge - keeping the mulch away from the trunk.
 - d. **Staking:** staking all trees (in accordance with standard techniques), one metal fence stake, or two 2x2 wooden stakes or equivalent are to be used. Preference is that stakes be installed beside the root ball so as to reduce potential damage to the roots. Stakes, regardless if they are inserted in or beside the root ball, should be installed into the sub-grade and tied to the tree using a non-fungicide treated binder twine or approved alternative. Stakes should be in the direction of prevailing wind to provide best support. Stakes and ties must be removed within two years and prior to the subdivision being released.
 - e. **Watering:**
 - i. thoroughly watering all trees at the time of planting with water that is suitable for irrigation and free from ingredients harmful to plant life.
 - ii. A water bag should be installed, and the adjacent landowner asked ensure the bag is filled appropriately to provide a constant water source (see f) below).
 - f. **Information:** informing the homeowners of the planting routines and providing information on proper tree care (instruction for watering, monitoring and who to contact).

- g. **Planting Holes:** creating a minimum 1.2 metre square planting area or 1.5 times the width of the root (whichever is greater) with a 10 cm. deep edge to minimize grass competition.
- h. **Planting Soil:** using 100% indigenous topsoil to avoid creating container type growing conditions.
- i. **Fertilizer:** is not required, if used; only a slow release fertilizer shall be used to promote root development (i.e., 10-25-10)
- j. **Tree Root Protection:** taking all necessary measures to ensure that the tree roots are protected from the elements (freezing and drying) by proper heeling-in, muddling and proper packing for transportation.
- k. **Debris Disposal:** Any rejected plants, soil, pruning, binding and/or any other material which has been brought to the project site shall be removed promptly, keeping the area clean at all times. Upon completion of the planting, all excess soil, stones and debris, which have not been previously cleaned up, shall be removed from the site and disposed of. All ground disturbed as a result of the planting operations shall be restored to its original appearance or to the desired new appearance.

Street Tree Planting Design Submissions

- 1. Show north arrow generally pointing to the top of the page
- 2. Check for proper orientation and legibility of information
- 3. Proper street names
- 4. Key map
- 5. Title Block
 - a) Drawing number
 - b) Drawing title
 - c) Place for Township approval stamp
 - d) Date
 - e) Revisions
 - f) Place for the consultant's stamp
 - g) Signature over stamp
 - h) Scale
- 6. Show all services (Bell, Cable, Gas, hydro, Sewer, Water, Easements)
- 7. Show all servicing poles, boxes etc
- 8. Show distance to from driveways, hydrants, lights, etc. must be reviewed between the Township and landscaper at the time of tree installation.
- 9. The drawing must include tree-planting detail, tree location with sidewalk or without sidewalk, and general notes with the soil type indicated and a legend indicating tree species on each lot.

Street Tree Planting Plan

Plan shall provide:

- a) Location of tree
- b) Type of tree proposed

- c) Planting list including code, common name, botanical name, size, shape, quantity, typical dimensions at maturity.
- d) Planting details
- e) Specifications
- f) Traffic control at intersections (stop signs, lights, yield etc.)
- g) Utilities
- h) Driveways

4.3 Street Tree Planting Details

These specifications are to serve as a standard for the planting of all street trees. The Township shall approve all tree planting on the public right of way.

Municipal capital projects shall provide for street tree planting as part of the development process. As the Township is a mix of urban and rural environments development may take place in both urban and rural settings.

Subdivision Developments shall provide for street tree planting as part of the development process. Street Trees shall be located on the public right-of-way and adhere to the design objectives, spacing and location requirements of this document. All tree planting on the public right-of-ways shall be approved by the Township.

Urban Tree Location

- 1) In general, the use of common sense when locating and planting trees is vital since there is tremendous variation in boulevard conditions.
- 2) Tree planting is to be undertaken after each lot has been developed and the final grading and sodding completed, reducing tree stress and mortality.
- 3) The overall goal is to plant one tree per lot or a tree per lot or one every 8 to 15 metres where practical and where growing space is available. Since large trees contribute more to the environment than small ones, the largest tree at maturity that fits the location is to be planted. The following are guidelines, which will help.
- 4) All trees are to be planted on Municipal property.

Tree Species and Timing

- 1) Only trees noted in:
 - a. Appendix A; and
 - b. "Recommended Urban Trees: Site Assessment and Tree Selection for Stress Tolerance Urban Horticulture Institute Department of Horticulture, Cornell University, Ithaca, New York", as appropriate,
 are permitted as street trees.

- 2) Generally, native trees are preferred and where possible make up the majority of the proposed tree plantings.
- 3) The Township may permit other trees as recommended by a Landscape Architect on a case-by-case basis. Trees with large and/or messy fruit, thorns, seed pods etc. are generally not permitted, exceptions for limited design statements may be permitted by the Township.
- 4) Coniferous trees needle-bearing trees are not permitted in a road allowance as a street tree.
- 5) All street trees are to be deciduous or broad-leaved trees appropriate for the Hardiness Zone in which Township is located.
- 6) Trees with similar shape (e.g., oval, upright) as other surrounding street trees are to be selected to provide a closed canopy effect.
- 7) Trees are to be planted as the development continues, and at a maximum, 1 year after the date on the final lot grading certificate.

Planting Requirements

- 1) No plants shall be dug or prepared until their location is approved by the Township. The locations for the trees shall be staked for discussion and review prior to planting taking place.
- 2) At the time of planting:
 - a. The minimum acceptable tree size is 50 mm (2 in) measured at 15 cm. above the stem flare. (*stem flare is the taken from where the stem of the tree from where the roots flare out which should roughly be the soil line depth. On young trees this is the preferred method of measure.*)
 - b. Trees must be in good health, with no bark scrapes, broken branches, insect of disease problems, heading back, and excessive root pruning.
 - c. Only trees dug with a tree spade and balled, burlapped or container grown are acceptable.
 - d. All trees must be guaranteed for a minimum of two growing seasons.
 - e. The landscape architect must provide the Township a list with the street address and species of tree planted, and the date when the tree was planted (in an Excel Format and as part of the final “as built” plans).
 - f. Replacement trees are to be to the same standards are noted above and must be planted within 6 months.
- 3) Street Tree Planting should be balled and burlapped, or container and shall only be pruned to promote strong scaffold branching i.e., remove dead or poorly structured branches. V branching less than 45 degrees and trees with co-dominate leaders will not be accepted. Trees shall never be clipped back or topped.
- 4) The following are the minimum sizes for plant material. Larger sizes may be required to provide a landscape effect.

- a. Caliper: 50 mm
 - b. Root Ball Diameter: 70 cm
- 5) No single species shall make up more than 30% of the total subdivision Street Tree population. This is to prevent disease susceptibility and eventual uniform senescence.

How to use List of preferred species for Street Trees

- 1) Carefully select the species which possess the characteristics which most closely meet the environmental conditions of each site (e.g., Do not select salt sensitive species for high traffic areas).
- 2) Other concerns that should be considered include:
 - a. **Stress** - considers the tolerance to conditions such as compacted soil, diseases, drought, insects, and road salt spray.
 - b. **Time** – consider which species can be transplanted / moved at specific times in the year.
 - c. **Native** – consider trees indigenous to this region for use as in areas found in close proximity to green spaces
 - d. **Fruit** – consider the size and season and abundance of fruit produced by some species making them less desirable in specific locations.
 - e. **Disease** – consider the potential for widespread mortality and costly removal and replacement programs generating public and political complaints with trees such as Norway Maple, American Elm. Avoid mass plantings of a single species.
- 3) Native species such as American Beech, Black Cherry, Ironwood do not appear on the list because of the infrequency of their use. Although they are considered desirable species, they should be used only when conditions are suitable for their needs and the availability is secure. The table does not list the species Norway Maple as this species and its cultivars should be avoided.

Street Tree Spacing and Location Requirements

1) Lot Width Considerations

Where lot width is:

- a. Equal to or less than 9m. (30ft), plant one tree per lot selecting a small shade or ornamental tree, depending on spatial constraints from the Approved Street Trees.
- b. Between 9m. (30 ft) and up to 15m. (50 ft), plant one tree per lot selecting a large or small shade to ornamental tree, depending on spatial constraints, from the approved Street Trees.

- c. Is greater than 15m. (50 ft), plant one tree per lot selecting a large or small shade to ornamental tree, depending on spatial constraints, from the Approved Street Trees.

2) Curb to Property Line Considerations

- a. Where no sidewalks exist or where sidewalk construction is not planned, plant trees 1 meter outside the private property boundary on municipal property.
- b. Where a boulevard between curb and sidewalk exists, that is greater than 2m. (6ft), plant large to small trees in the centre of the boulevard - assuming no overhead utility.
- c. Where a boulevard between curb and sidewalk exists that is 1.2m (4 ft) to 2 m (6 ft) plant, ornamental or small shade trees in the centre of the boulevard.
- d. Trees are not to be planted within boulevards, which are less than 1.2m (4 ft) wide. In this case – the tree shall be planted in municipal property, between the property line and the sidewalk, about 1 meter from the back of the sidewalk.
- e. Trees must be aligned along the street in uniform pattern (spacing, setbacks) (see figure 5) along the entire street to provide a linear pattern. Exceptions to this may be for utility conflicts and intersection requirements under the approval of the Township.
- f. On streets where the majority of the lots are 11 metres in width or less, the trees shall be placed on the property line.

3) Utility Conflict Considerations

- a. Where utility items such as pedestals, boxes, street light poles etc. are located in the area which conflicts with the overall street tree placement in uniformity with other street trees. To address the conflict, either:
 - i. locate all street trees to maintain the linear uniform pattern
 - ii. create a consistent uniform pattern along the entire street.

4) General Requirements/ Considerations

- a. Plant only ornamental tree varieties under overhead utility wires.
- b. No tree is to be planted closer than 2 meters (6.7 ft) to a driveway, lead sidewalk going into a property, underground vault, storm or sanitary sewer.
- c. No tree is to be planted closer than 1.5 meters to a street light pole, fire hydrant.
- d. No tree is to be planted within the required day lighting triangle. (i.e. No street tree shall be planted within 35 feet of any street corner, measured from the point of nearest intersecting curbs or curblines.)
- e. No street tree shall be planted within than 3metres (10 feet) of any fireplug.
- f. In all subdivisions, street trees shall be planted either in the boulevard, or if not possible on the property line about 0.75 metres (2 1/2' feet) behind the sidewalk. In all cases attempting to maintain linear uniform pattern shall dictate the shall be the goal (Section 7.4.4. and 7.5);
- g. Trees shall not be planted on cul-de-sac islands.

- h. For new sidewalks, to encase a tree, a minimum of 2.5 square metres of porous area is to be left surrounding the tree;
- i. In all subdivisions and parcel map areas, street trees shall be planted within an area 0.75 metres (2 1/2' feet) to 1.2 metres (4' feet) behind the sidewalk;
- j. Trees should not be planted in a direct line with the drainage swale between lots or directly above underground utilities.
- k. Trees shall be selected to generally - reach a height of 7.62 metres (25 feet) where power lines exist, and a height of 12 metres (40 feet) where there are no power lines, sewers, and water mains;
- l. Trees shall be resistant to road salt damage if within the 4 metres of the travelled/paved road allowance;
- m. Not be prone to easy damage by weather conditions;
- n. Be resistant to common tree diseases (i.e., elm disease);
- o. shall not be a fruit tree (fruit from tree will fall on roads and sidewalks);
- p. Certain trees with undesirable characteristics such as fruit, low branches, unpleasant odors, excessively thick foliage, susceptible to disease, or large root systems are prohibited. Willow, Poplar and Cottonwood trees are not permitted. In commercial areas or in those areas in which sidewalks are required or authorized to extend from the curb to the property line, street trees shall be planted in the sidewalk area in a 1.2 (4' feet) square area minimum, adjacent to the curb; and
- q. Meet the goals of the **Street Tree Design** requirements

Street Tree and Parkway Design

Design Standards

- 1) Four design elements to take into consideration when designing a street tree planting plan are:
- 2) Form, Size, Texture, and Colour.
 - a. **Form** – the most suitable forms for street trees include round, oval, upright oval, or irregular.
 - b. **Size** – size of the tree at maturity and size of the planting area as well as the building styles should be compatible.
 - c. **Texture** – texture refers to the visual characteristic of a tree. A tree's texture is created by foliage and twig size primarily, with bark characteristics also playing a part. Subtle changes in texture are appropriate and will add interest to the street space.
 - d. **Colour** – uniformity with subtle change is important when considering colour combinations.

- 3) The use of form, size, texture and color is the key in street tree design. Seldom will all design elements be utilized but they all must be considered. To achieve design continuity, repetition of elements is basic, with form and size being the dominant design elements.

Street Tree Design

- 1) Street trees should be used in an assertive, architectural fashion to reinforce and connect the spaces and corridors created by buildings and other features. Tree Plantings should be on the grand public scale rather than intimate and private. Larger native trees (i.e., maple and oak) with high canopies spaced at **8-10 metres** on centre, in groves and alleys, are favored over the individual ornamental tree. Large canopies should interconnect to enclose and unify space. Heavy pedestrian traffic should continue below unhindered. To accomplish this objective, wide medians and parkways should be developed.
- 2) The importance of street trees to define, reinforce, or create spaces cannot be over emphasized. The use of trees as sculpture or decoration is incidental to their fundamental value for spatial arrangement in urban design and environmental benefit.
- 3) Street trees establish a lower space that is comfortably sized for human use and still permits people to experience the larger space. Tree branches create a partially transparent tent to canopy that allows awareness of the space beyond. Trees can do this more easily than inert material because of their unique properties. Their size irregularity, subtle translucence and psychological impact make them appropriate where no other structure would seem suitable. (Arnold 1980)
- 4) The street corridor as defined by trees must be considered a volume of space and not simply an elongated or lineal ground plane. A successfully designed street side landscape will be open where pleasant views or safe vision is desired; closed where visual screen is needed; and varied in form, size, texture and colour for interest. Spatial variety is important in preventing driver fatigue, maintaining driver alertness and emphasizing danger zones. It also helps in developing satisfactory visual leads while too little variety results in monotony. Motorists and pedestrians should move safely and freely through the corridor, enjoying a streetscape designed to keep them relaxed, happy and alert. (Deneke, Grey, 1986)
- 5) A street corridor space, whether occurring naturally or intentionally, will be enclosed by base, vertical, and overhead planes. It is a three-dimensional enclosure of space, is also the area where street trees have their greatest influence. Therefore, street trees and other objects that create vertical enclosures are the most significant parts of the space. In creation of this vertical enclosure, the importance of the proper use of street trees with respect to form, size, texture, and color cannot be over emphasized. (Deneke, Grey, 1986)

- 6) The vertical enclosure created by street trees or other objects provides visual control. Everything that occurs within the enclosure is part of the visual function of that space and must be taken into account. A desirable object can be emphasized and conversely, an unattractive object negated by manipulating the vertical enclosure. Strong contrasts in form, size, texture, and colour or combinations of the design elements will create interest and lead the viewer's eye to a desired object. By the same token, repetition of any of the design elements may tend to negate an associated object. An object outside the vertical enclosure of the street space can be introduced into the space visually. A pleasing feature can become part of the visual scene when openings in the tree rows are designed that permit viewing and provide framing of the outside object (Deneke, Grey, 1986).
- 7) Generally strong contrasts within street tree groupings should be avoided. Repetition and subtle changes in form, texture, size, and colour are desirable. Exceptions to this principle occur at major intersections or any other area where alertness and viewer attention are desired. (Deneke, Grey 1986).
- 8) The use of form, size, texture, and colour in the development of aesthetically pleasing and functional spaces is the key in street tree design. Seldom will the designer utilize all four of the design elements at one time in concept development, but all four must be considered. To achieve design continuity, repetition of elements is basic. For example, careful selection and spacing of trees with respect to size, form, and colour or size form and texture are common approaches. The common denominator should usually be size and form. Exceptions to the above guidelines occur when emphasis or viewer attention is desired. In such case, the more variety or change from the characteristic landscape, the stronger the emphasis. For example, in composition where medium-sized trees, round in form, green in colour, and fine in texture predominate, plants that are large pyramidal, bright red, and coarse in texture seem to shout for out attention (Deneke, Grey 1986).

Street tree design objectives:

- 1) Reinforce and extend spatial quality of the community/neighbourhood
- 2) Be deployed to define and direct use
- 3) Organize architectural spaces as well as reinforce and embellish good architecture
- 4) Create spatial rhythms to heighten the experience of moving through outdoor spaces.
- 5) Reinforce the lineal form of streets
- 6) Enhance urban elements
- 7) Be utilized not as decoration, but as living building material (i.e., act as a sound barrier)

LANDSCAPE and DESIGN GUIDELINES

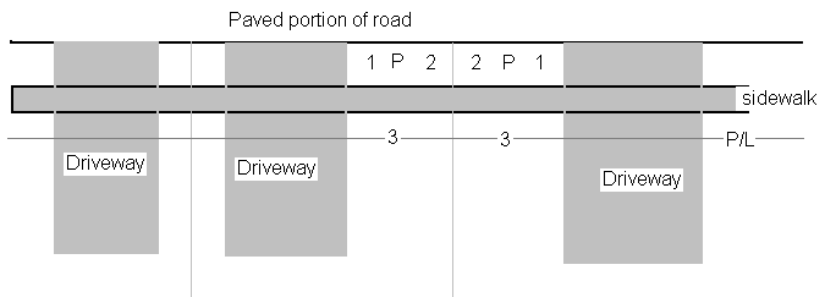
- 8) Be an extension of the local neighbourhood and the community
- 9) Link and extend, not separate
- 10) Restore desirability to urban living
- 11) Symbolize the renewed fitness of the urban environment for all forms of life
- 12) Provide symbolic significance
- 13) Be an intrinsic part of the community's structure
- 14) Improve the connection between indoor and outdoor spaces
- 15) Provide environmental benefits, i.e., tree roots stabilize the soil and prevent erosion, trees provide shade and shelter, reducing yearly heating and cooling costs.

Dealing with Conflicts

When a conflict exists in the placement of street trees two elements must be considered:

- the relocation or alternative placement of the proposed tree, and
- the implications of changes along the entire street.

To address these issues, the following is proposed.



The preferred location (P) is the first location, if conflicts look to move the tree closer to the driveway (to maximize separation or equal spacing of trees) and then to closer to property line. If the tree cannot be located in the boulevard (P, 1, or 2) the tree should be moved to on the other side of the sidewalk and placed on the lot line (3).

If there are a number of conflicts on the street along one side or another, all of the trees should be moved to the property line (position 3) to maintain a uniform planting pattern.

Rural tree Locations

- 1) Standard urban tree planting requirements shall also apply in any rural planting situations.
- 2) Where a ditch exists the tree must be located on the road allowance, on the tree shall be located on the side of the ditch furthest away from the road. No tree shall be planted in the low point of the ditch.

- 3) No tree is to be planted closer than 2 meters (6.7 ft) to a driveway, sidewalk going into a property, underground vault, storm or sanitary sewer.

4.4 Guidelines for demarcation and tree planting

Where demarcation is required under a development agreement (i.e., site plan, plan of subdivision, consent) demarcation using trees in conjunction with monuments is preferred. Trees shall be installed between each monument.

Demarcation monuments shall be:

- Placed every 30 metres or where there is a change of direction in property line.
- Be 1.8 metres (6 feet) long with 0.9 metres (3 feet) above the finished grade.
- Be 9 cm by 9 cm (3.5 inches by 3.5 inches) in size; and
- Be made of grey recycled plastic.

-As noted, trees are to be placed between each monument -

4.5 Natural Area Restoration

For restoration or enhancement of natural areas, as report completed by a qualified Landscape Architect should outline the feature and plant species found within and propose any enhancement or restoration with the use native species adjacent to natural areas, or appropriate cultivars. Native species should be those found in the feature or found in other such features across the Region

4.6 Tree Preservation

Depending on the nature of the existing site conditions, the Planning Services Department may require a Tree Preservation Plan as part of the Site Plan/Plan of Subdivision submission.

4.7 Tree retention and replacement

Purpose statement

The purpose of this procedure is to outline the required action to protect trees during construction. This procedure shall represent the standard specifications for tree protection whenever tree protection measures are required by the Township. Higher standards of tree

protection may be imposed where warranted in the opinion of the Township having regard to the size, variety, location and health of the tree, and any circumstances surrounding the construction which requires additional tree protection measures.

Scope

This procedure applies to Township and private trees covered under any municipal process or agreement relating to construction.

General procedure

Township trees required to be removed as a result of construction activities must receive approval by the Township Planning Section. If approval is granted for removal of Township owned trees, the applicant will assume all costs involved and shall either:

- 1) pay the amenity value of the tree(s) calculated in accordance with the most recent International Society of Arboriculture Guide for Plant Appraisal; or
- 2) plant the equivalent number of trees based upon a “no net loss or canopy cover” objective as determined by the Township. Where tree relocation is approved, the applicant will assume all relocation and establishment costs.

Privately owned trees to be removed as a result of construction/development activities must receive approval by the Township Planning Section. If approval is granted for removal of trees, the applicant will assume all costs involved and shall either:

- 1) replace the trees at a ratio of 1:1 or
- 2) pay the amenity value of the tree(s) calculated in accordance with the most recent International Society of Arboriculture Guide for Plant Appraisal; and/or
- 3) plant the equivalent number of trees based upon a “no net loss or canopy cover” objective as determined by the Township or designate in an alternatively approved location. Where tree relocation is approved, the applicant will assume all relocation and establishment costs.

Anyone failing to adhere to this procedure will be financially responsible for any resulting damage to trees in addition to any penalty that may be imposed under relevant by-laws or statutes.

1. The Tree Protection Zone

The 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. If trees are protected to the TPZ then the tree’s anchor root structure is expected to be maintained.

No unauthorized activities may take place within the TPZ of a tree covered under any municipal permit process or agreement. The following chart shows the TPZ. Some trees and site conditions may require a greater setback at the Township’s discretion²

Diameter of Trunk (DBH)² in centimetres	Tree Protection Zone³ Distance from trunk measured in metres
<10	1.8
10-30	2.4
31-50	3.0
51-60	3.6
61-70	4.2
71-80	4.8
81-90	5.4
91-100	6.0

- 1) For trees over 100 cm. DBH, add 10 cm. to the TPZ for every centimetre of DBH.
- 2) Roots can extend from the trunk to 2-3 times the distance of the drip line.
- 3) Diameter at breast height (DBH) measurement of tree trunk taken at 1.37 metres above ground.
- 4) Tree Protection Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work.

2. Tree protection barriers

- a. Trees within or adjacent to a construction site must be protected during construction by means of a barrier installed in accordance with the table in section 1 and meet the following specifications:
- b. Tree protection barriers must be erected prior to the commencement of any construction activity that may injure a tree on the site and are to remain in place throughout the entire duration of the project. The applicant shall notify the appropriate Township department in writing prior to commencing any such activities to confirm that the tree protection barriers are in place.

- c. The tree protection barriers specified herein must remain in a condition satisfactory to the Township until all site activities including landscaping are complete.
- d. Authorization from the appropriate Township department must be obtained prior to the removal of tree protection barriers.
- e. If some fill or excavated material must be temporarily located near the tree protection barrier, a wooden barrier must be used to ensure no material enters the TPZ.
- f. A sign, provided by the Township that is similar to the illustration below will be paid for by the application and mounted on one side of a tree protection barrier for the duration of the project.

Tree Protection Zone

- 1. No grade change, storage of materials or equipment is permitted within this area.
- 2. This tree protection barrier must not be removed without the written authorization of the Township.
- 3. Unauthorized removal of the tree protection barrier or other contraventions may result in prosecution.

Tree protection permit and or agreement - authorization from the Township

For trees covered under this procedure, written authorization from the Township is required in the form of either a Tree Protection Agreement, or a Tree Protection Zone Encroachment Permit or a Tree Permit; and

The applicant is required to have a Township approved tree service raise the crown of all branches to provide adequate clearance for construction equipment.

Tree Protection Agreement (TPA)

- 1. The applicant is required to enter into a Tree Protection Agreement when construction activities take place outside of the TPZ area as determined by Township Forester or designate. Should the Township determine that a tree protection agreement is required, a tree protection agreement fee shall be charged to the applicant in accordance with the established Township fees
- 2. Tree Protection Zone Encroachment Permit (TPZEP)
 - a. It is recognized that there are cases where existing or proposed utilities, capital infrastructure or buildings are located within the TPZ of a tree impacted by construction. The expectation is for the project design to respect the TPZ, however, in cases where the proposed construction impacts the area within the TPZ, the applicant shall demonstrate, with appropriate supporting documentation, that the impact on the structural integrity of the anchor roots will be within acceptable limits to avoid creating a hazardous tree.

- b. A Tree Protection Zone Encroachment Permit is required when construction activities take place within the TPZ. An Application for TPZEP must be submitted to the Township of Oakville prior to anticipated construction start date. No other permit, agreement and/or consent issued by the Township authorizes working inside the tree protection zone of a Township Tree.
 - c. An arborist must be present on site at all times when work is within the TPZ. The schedule of inspections must comply with Section 7 set out herein. Above ground clearance for overhanging branches in the work zone must be taken into consideration. The applicant is required to have a Township approved tree service raise the crown of all branches to provide adequate clearance for construction equipment.
 - d. The Township specifies the non-invasive methods of excavation including but not limited to air spade, hydro vac, hand digging to minimize the damage to the health and structure of the trees.
 - e. Root pruning in open trench methods of construction is required under the direction of - and along with - written approval of an arborist. The objective is to minimize severance of anchor roots, which provide upright support for the tree, thereby minimizing potential hazards.
 - f. Emergency repairs due to underground utilities are permitted to commence immediately. However, the utility company concerned is responsible for notifying the Township as soon as possible when Township trees are involved.
3. Tree Permit (TP)
- Where the impact on the structural integrity of anchor roots is beyond acceptable limits and may cause a hazardous tree:
- a. the tree may be removed in accordance with the applicable by-law; or
 - b. in the case of a Township tree, the applicant shall bear the cost of the tree and stump removal as well as payment of the amenity value of the tree as calculated in accordance with the most recent International Society of Arboriculture's Guide for Plan Appraisal.
4. Standards for report
- a. An Arborist Report is required: where multiple trees are involved in a Capital Project, a Municipal Consent, and/or a planning application; and an Arborist Report is mandatory to initiate a Tree Protection Zone Encroachment Permit or a Tree Protection Agreement.
 - b. An Arborist Report shall be prepared by an Arborist and must include but is not limited to the following:

- i. Species referenced to municipal address, ownership and location through an accurate plotting and identification of all trees on the plan;
- ii. Diameter at breast height (DBH), measured in centimeters at 1.37 metres above ground level;
- iii. Crown spread (Drip Line), measured in metres;
- iv. Tree health/disease;
- v. Soil compaction inside the TPZ using methods approved by the Township;
- vi. Tree risk assessment for trees deemed hazardous as assessed by the arborist, must be provided in accordance with “Best management Practices, Tree Risk Assessment, International Society of Arboriculture” as revised from time to time, including a photographic record of each tree as required by the Township; and
- vii. For each tree identified as being preserved and each tree recommended for removal, the valuation as determined by the most recent International Society of Arboriculture’s Guide for Plant Appraisal.

The Township may request additional information in an arborist report for Capital projects, Municipal Consents, and planning applications at the discretion of the Township.

5. Standards for tree protection plan(s)

- a. A Tree Protection Plan is required for site plan and site alteration applications at the determination of the Township. Such plans shall include but are not limited to the following:
- b. Accurate plotting and identification of all trees on the plan in accordance with;
- c. Crown spread, measured in metres on a drawing indicating the appropriate scale, showing extent of tree foliage covering the lot;
- d. Approved Grading plan. This requires collaboration of the applicant's engineering and arboricultural consultants;
- e. Approved servicing plan indicating water, sewer/storm, hydro, gas, bell, cable and any other impacted utility. This requires collaboration of the applicant's engineering and arboricultural consultants;
- f. Tree protection zone (TPZ) limits;
- g. In accordance with the Tree Protection Barrier requirements;
- h. Appropriate signatures in accordance with the Tree Protection Plan - Schedule 3; and
- i. The name and contact information for the arborist responsible for monitoring the implementation of the plan.
- j. The Township may request additional information in the tree protection plan for planning applications at the discretion of the Township.

6. Securities for tree protection

Where tree protection measures are required as a condition of any agreement, approval or permit, the Township will require securities to secure the protection of trees. The required securities, as determined by the Township shall be held by the Township for a period specified by the Township. Early release of securities may occur provided the Township is satisfied that the tree has not been damaged. Applicants requesting for the early release/reduction of securities or final release shall submit for approval an Audit from an arborist certifying that the tree is in a state of vigorous health and has not been injured or destroyed as a result of the construction activities in accordance with section 7 below.

7. Tree protection audits

Tree Protection Audits prepared by an arborist are required for all trees present or adjacent to a construction site when activity, or the potential for activity, takes place within the TPZ. A schedule of audits by an arborist will be specified at the discretion of the Township and shall consist of a minimum of three written site inspection reports. These tree protection audits shall include the following:

8. Tree Impact Evaluation:
 - a. Disturbances which occurred within TPZ
 - b. Excavation distance from the trunk and depth of excavations (e.g. grade changes, underground utilities, pavement section, footings, foundations, etc.)
 - c. A soil compaction comparison to pre construction condition
 - d. Distance and diameter of any severed structural roots (greater than one inch in diameter) to the trunk
9. Mitigation process and costs:
 - a. Pruning, irrigation, fertilization, and mulching requirements
10. Tree Hazard mitigation, if applicable
11. Tree replanting program, if applicable
12. Soil amendments (e.g. soil aeration, soil removal and replacement, etc.)
13. Recommendations for removal of severely damaged or hazardous trees
14. Provide photographic records where appropriate
15. Compliance with this procedure
 - a. Failure to comply with this procedure may result in one or more of the following:
 - b. An Order to Comply
 - c. Loss of security in whole or in part
 - d. Prosecution under an applicable by-law
 - e. Additional remedial costs as determined by the Township

Definitions

Arborist: means a person who has graduated from an accredited college or university with a diploma or degree in Urban Forestry, Arboriculture or equivalent and satisfies at least one of the following requirements:

- is certified by the Ontario Training and Adjustment Board or the International Society of Arboriculture;
- is currently accepted as consulting arborist with the American Society of Consulting Arborists;
- is a Registered Professional Forester (RPF) as defined in the Professional Foresters Act, 2000, S.O. 2000, c. 18; or
- has comparable qualifications to those set out under clauses (a) to (c) above as approved by the Designated Official.

Hazardous Tree: means a tree that is destabilized or structurally compromised such that it poses a potential safety concern to property or life.

Woodlands: means as defined in the Halton Region Tree By-Law 121-05, as may be amended or replaced, namely: an area of land with at least: 1000 trees, of any size, per hectare or 500 such trees per 0.5 hectare; 750 trees, measuring over five (5) centimetres in diameter at DBH, per

hectare or 375 such trees per 0.5 hectare; 500 trees, measuring over twelve (12) centimetres in diameter at DBH, per hectare or 250 such trees per 0.5 hectare; or 250 trees, measuring over twenty (20) centimetres in diameter at DBH, per hectare or 125 such trees per 0.5 hectare; but does not include: an active cultivated fruit or nut orchard; a plantation established for the purpose of producing Christmas trees; a plantation specifically planted and maintained for the purpose of harvesting as certified in writing by an Officer based on field inspection and investigation; a tree nursery, or a narrow linear strip of trees that defines a laneway or a boundary between fields.

Responsibilities

It is the responsibility of the Forestry Section, Parks and Open Space department to ensure that applicants are in compliance with the Tree Protection policy & procedure in relation to Township trees in driveway applications, road cut applications, Capital projects and park access applications.

It is the responsibility of the Development Engineering department to ensure that applicants are in compliance with the Tree Protection policy & procedure in relation to trees in planning applications.

5.0 SUBDIVISION BOULEVARD AND ROUND-A-BOUT STANDARDS

These specifications are to serve as a standard for boulevard and round-a-bouts. The Township shall approve all soil conditions and planting on the public right of way.

As the Township is a mix of urban and rural environments development may take place in both urban and rural settings.

Subdivision Developments shall provide for boulevard landscaping in addition to tree planting, as part of the development process. All landscaping on the public right-of-ways shall be approved by the Township.

Sidewalks

Sidewalks shall be installed to the following standards:

- Shall be on both sides of the street and within the boulevard
- Minimum of 1.5 metres in width
- Concrete
- Sloped to permit positive runoff to the municipal road.
- Tactile and curbs cuts at intersections to AODOA standards.

Boulevard

In addition to the sidewalk, a landscaped strip shall be provided between the curb and the property line. The boulevard shall be installed as per the following:

- Edges will be tapered, and adjacent sod will be installed 25mm below finished surface of walkway so as not to trap water on the pathway surface.
- Topsoil shall be installed at a depth of 45cm.
- Should be a minimum of 1.5 metres in width

Round-a-bout/ traffic circles/ cul-de-sac islands

Where required, roundabouts, traffic circles and cul-de-sac islands strip shall be provided to the satisfaction of the Township and as per the following:

- Topsoil shall be a minimum of 45cm in depth
- Where plantings are required, they shall be installed as per the planting guidelines.
- Generally, appropriate and easy to maintain plantings shall be provided in the center of traffic islands and roundabouts
- A grassed area or concrete strip of 1.5 to 2 metres shall be provided around the edge of the island for snow storage.

6.0 PARKLAND DESIGN AND DEVELOPMENT REQUIREMENTS

6.1 General Requirements

The following section describes the general requirements of development interests in the condition, pre-servicing and physical development of lands to be conveyed for public use as parkland. These requirements are further to any conditions and requirements outlined in the subdivision agreement and its schedules, site plan agreements, Zoning By-laws, along with those required as a component part of the Development Charges or Community Benefits By-law and its related supporting documentation. In the case where requirements overlap or vary, the Township shall be the sole arbiter of what requirements will be required for development on a case by case basis.

Where required and reasonably possible all parks shall be AODA compliant as per Section 6.4.3.

6.2 Pre-development Condition of Parkland

Municipal property preserved as open space or intended for parkland development will not be used for the purposes of temporary stockpiling or storage of: earth, construction supplies, construction trailers, construction supplies, debris, or any other materials without express permission of the Township. Lands set aside for parkland are presumed to have been subject to the equivalent of a Stage 1 Environmental Audit by the developer for his own purposes of acquisition and development; and as such possessing of suitable soil conditions for development purposes and free from contamination and buried debris or garbage. Upon the initiation of development activity, designated parks and open spaces will be routinely monitored by Township inspectors for activities of dumping or burying of any sort of garbage or waste and should such materials be discovered in the construction of the future park, the developer will be required to remove such materials at no cost to the Township.

Designated parkland and open space will not be used for the erection of advertising signage or for the storage construction trailers or construction equipment. The developer will maintain pre-serviced parkland in a clean condition at all times until the park is accepted by the municipality for the purposes of park construction. Once designated lands have been pre-graded and pre-serviced they shall be defined and protected at their boundary with post and wire fencing to the satisfaction of the Township.

As noted above, the lands shall not be utilized for the stockpiling of topsoil stripped from the subdivision except for any topsoil that is required for the finishing of the park. Upon completion of pre-grading, the developer is to provide a survey plan, prepared by a registered Ontario Land Surveyor, describing the as-built topographic condition of the park. The survey is intended to demonstrate that the park pre-grades reflect as closely as possible the intent and designed geodetic elevations of the subdivision engineer's grading and drainage plans.

It is the intent of the Township, with the cooperation of the developer to reduce disturbances to the park and those who reside in the vicinity and to take advantage of available economies of scale and cost efficiency by limiting the need for temporary restoration by the developer. In this way it is hoped that the park development process can be sequential and streamlined to allow construction by the Township or the developer immediately upon completion of pre-grading. If the park construction cannot be feasibly started within one year of completion of pre-grading, the developer will be required to provide temporary restoration of the park in the form of seeding with a seed mix suitable for the soil conditions and approved by the Township in accordance with the subdivision agreement.

6.2.1 Topsoil Stripping and Grading

Prior to grading of the park by the developer, the full depth of existing topsoil will be stripped. Topsoil stripping is to occur in logical sequence with the balance of the subdivision or phase.

Topsoil, in quantities necessary for the park development shall be conserved and made available for the final grading of the park block with a depth of 0.6 metres. Greater depths of 0.6 to 1.5 metres may be permitted, if deemed appropriate, in open areas. Where greater depth of topsoil is proposed the soil must be compacted at regular intervals. Where future structures, parking etc is likely topsoil can be place to a depth of approximately 0.15m.

The developer is to ensure that topsoil conserved for the park is of an appropriate fertility and composition that is suitable for use in park construction. Such test results are to be submitted to the Township for approval prior to the development of the park block. The developer will be responsible to ensure that sufficient quantities of approved topsoil are available for the construction of the park.

Utilizing the approved Park Concept Plan or subsequent Grading Plan, the developer is to provide suitable structural fill below all hard-surface areas including pathways, paved recreation facilities and parking areas within the park. Areas of structural fill are to be tested by a Geotechnical Consultant and the results of such testing submitted to the Township for information. The Developer will be required to establish sub-grade elevations as described by the Grading Plans for the park. Where park blocks are stripped and pre-graded in accordance with subdivision engineering plans at the early stages of the subdivision development, the developer shall be responsible to execute additional grading to the park to bring the lands into conformance with the specific plans developed for the park by the landscape architectural consultant.

6.2.2 Co-ordination of Services

The developer shall at a minimum provide inlet drop structures at each frontage of the park block. These structures shall be in conformance to Provincial standards (O.P.S.D.) for the construction of manholes or manhole/catch basins. Connections from these structures to the

surrounding storm sewer system shall be of an invert elevation set low enough to efficiently drain the entire block of land below frost penetration levels. The park block shall be effectively drained in its interim pre-grade condition with inlet structures as needed for each sub-drainage/catchment area within the park block. Should the structures provided be shown to be insufficient to outlet the future internal drainage system of the park as designed, additional drop structures and road crossing connections shall be the responsibility and cost of the developer.

In addition to storm sewer servicing and as a part of the servicing requirements for sanitary, electrical and water supply throughout the subdivision, the developer will be responsible to construct services 1.5 metres into the park property as follows:

- Community Park (as per Section 6.3): a sanitary sewer manhole chamber and stub; a 150mm diameter water supply line with curb-stop and 3-phase electrical power. Where the Community Park has two or more street frontages, all or some of these services are to be provided at each frontage to the park as confirmed with the Township.
- Neighbourhood Park (as per Section 6.3): a 50mm diameter water supply line with curb stop and a single-phase electrical supply line from a local transformer. These services will be stubbed and clearly marked with a permanent monument at ground level.

The Township may require additional levels of servicing where such a need is anticipated or identified.

The above requirements for drainage and servicing are considered as a component part of the general development of the subdivision but in detail are to be separate from the developer's responsibility for any storm water management mechanisms that may be permitted within or be associated with the park. Costs for such subdivision storm water engineering works are to be entirely attributable to the developer in the development of the lands. Drainage requirements for the ultimate development of the park block will be determined in the detail design processes described herein.

The Township encourages the exploration of potential cost efficiencies for the municipal services related to final park construction. Once the storm sewer design for the entire park is determined through detail design and construction drawings prepared for the park, the developer will be requested to co-ordinate construction of the entire sewer system and construct the park-related drainage works in conjunction with general subdivision servicing if deemed cost-effective for the Township. The costs for such Township works are to be submitted to the Township for agreement prior to the specific construction activity. The Township will

reimburse the developer for that portion of servicing costs that are the Township's responsibility pending the inspection and acceptance of those services by the Township. Reimbursement for such works may also be contingent upon the timing of approvals of the Township's capital budget as it relates to the park block.

6.2.3 Park Fencing

Notwithstanding the installation of temporary protective fencing of park and open space blocks, the developer is to provide a 1.8 metre (6 ft.) high black vinyl coated chain-link fence, to the Townships standard detail, around the perimeter of the park along shared property lines with adjoining residential or commercial developments. The mesh fabric of the fence shall have 38mm diamond shaped openings made from 9-gauge wire before vinyl coating. Terminal posts shall be a minimum of 88.9 mm (3 ½") OD pipe, line posts of 60 mm (2 3/8") OD pipe and rails of 43mm (1 7/8") OD pipe. All piping shall be schedule 40, galvanized steel, treated with etching primer and factory painted black. Concrete footings are to create a minimum of 150mm of cover to the edges of posts and shall be generally poured against smooth native ground and formed at the top of foundation. Where ground conditions prevent the creation of smooth sided augured post holes, footings shall be poured into sono-tube for the full depth of footing to 1.2 metres below grade with voids around the outside of the form filled with compacted limestone screening.

6.2.5 Securities and Acceptance

Performance of the above-referenced requirements shall be guaranteed through the provisions of the subdivision agreement and the value of the works described for the preparation of the applicable schedule/section of that agreement. The Township shall secure from the developer a letter of-credit for the value of all work described above in this section and for any additional requirements as may be stipulated in the subdivision agreement at the discretion of the Township. The letter-of-credit will be based on a cost estimate prepared by the developer's consultants and reviewed and approved by the Township. The Township will assume responsibility for the park only at such time as the property is ready to be constructed by the Township under the Development Charges or Community Benefits Policy. In the case when temporary restoration through grading and seeding has been required to convey property prior to park development, acceptance will occur when turf cover is satisfactorily established and the lands are considered by the Township to be stable, free from erosion and efficiently drained.

6.2.6 Park Construction by Developer

Development and/or Subdivision Agreements may require the developer to construct parks in response to timing or permissions with regard to construction of phases within a development. The developer on its own initiative and interests may wish to enter into front-ending agreements with the Township for the early delivery of parkland. In cases where such requirements are not registered as a condition on a plan, the developer has the option to

develop the park on behalf of the Township in advance of the Township's capital budget schedule. Such option may be negotiated with the Township if it is deemed advantageous for the subdivision developer and does not impose undue additional administrative or operating costs on the municipality.

In such instances, performance of park construction will be treated as any other municipally approved subdivision construction. The developer should expect to develop a park to the approval of the Township, completing the construction to a set of Township-approved technical drawings, specifications and standards. The construction tender and contract process shall be open, and the Township reserves the right to review and approve the award of the park construction tender. An agreement will be executed, and a letter-of-credit will be secured from the developer to ensure timely completion to a level of quality and workmanship acceptable to the Township. Joint Township/Developer tenders may also be approved to take advantage of cost and time efficiency. The Township will reimburse to the developer the portion of costs the Township is responsible for under the Development Charges or Community Benefits By-law within a time frame and re-payment structure agreeable to both parties in the construction agreement.

6.2.7 Park Construction Timing

Notwithstanding the discussion of park construction in section 2.2.5, parks will generally be constructed upon 50% occupancy of a residential subdivision. Where the developer's phasing of a subdivision, because of servicing availability or other factor may delay the achievement of 50% occupancy within the entire subdivision, the Township at its option may seek the construction of the park on an accelerated schedule to ensure service to the local community area. The Township will maintain capital construction forecasts for parks to the best of its ability based upon growth forecast information provided by developers and the five-year trend evidenced by building permit issuance activity.

6.2.8 Park Construction Budgets

The Township will attempt to maintain capital budget forecasts for parks construction based upon conceptual designs and projected costs for new parks to be created. Such forecasts will be updated and modified from time to time in step with the Township's budget approval process. Individual parks will be assigned capital budgets for construction based upon the predicted program for the park and the affordability of such a program in light of anticipated Development Charge revenues. Should a developer, for purposes of marketing or community design theme wish to expand on an agreed park program with additional features within a design, the costs associated with the additional features shall be the sole responsibility of the

developer and not candidate for re-imburement under the Development Charges or Community Benefits By-law.

6.3 Requirements for Park Design Plans

6.3.1 Park Design and Facility Development

Park facilities and amenities constructed, which will include meeting AODA accessibility standards, by or on behalf of the Township may include, but will not necessarily be limited to or include all of the following features:

A. Township-Wide Parks

Any facilities described under the following sub-sections for Local and Community Parks may also apply to a Township park depending upon the nature of the park and its purpose in the overall parks and open space system. Township wide parks can be a variety of sizes and have a variety of purpose depending upon context and municipal setting. Regardless of this the intent is that such facilities are to be memorable places within the community whether it be for outstanding sporting and recreation facilities or for architecture, art, historical reference or cultural significance. Facility requirements and design standards will be determined on a site-specific basis at the time of Park Concept Plan preparation and may be tied to a population density.

B. Community Parks

Community Parks may also contain some, or all of the following park features:

- Designs shall include sustainable features including recycled products, water and energy conservation features and locally manufactured products wherever possible
- Sports fields for Senior and Junior Play - including soccer pitches, softball or slow-pitch diamonds complete with park features and furnishings such as backstops and boundary fences, goal posts, players benches and spectator bleachers.
- Any combination of 2 or more major athletic facilities including: baseball, softball/slow pitch, soccer pitches, rugby grounds, field or box lacrosse, tennis courts, bowling greens or other structured sport facility
- Public art or historical display features
- Park identification signs and signs for information and regulations
- Shaped landforms, berms and drainage swales
- Areas of tree preservation or rehabilitation planting
- Planting designs of trees and shrubs to provide shade, interest and emphasis within the park
- Playground apparatus including junior and senior play elements with a clear emphasis on barrier-free design

- Water splash pad or other water play feature to serve a broader community area
- Basketball and hard surface multi-purpose courts
- Gazebos, picnic shelters or other seasonal structures
- Field houses/washroom buildings
- Parking on site and/or in combination with an adjoining school site
- Three-Phase Electrical Supply and walkway lighting systems with isolation circuit
- Walkway lighting and lighting for security at park structures
- Floodlighting of major athletic facilities
- 150mm water supply line, utility building for irrigation and water play infrastructure
- Sanitary sewer service to park buildings
- Landmark features of park architecture or public art
- Large areas of unstructured parkland or naturalistic landscapes linked to the surrounding community and open space system
- Trail heads and trail connections to the interconnected trail network

C. Neighbourhood Parks

- Designs shall include sustainable features including recycled products, water and energy conservation features and locally manufactured products wherever possible
- May include, play courts for junior play, full or half courts for basketball or other sports
- Playground apparatus including junior and senior play elements, which may include inclusive play and barrier free elements
- Pathways, sitting areas and park furnishings (e.g. benches, garbage facilities)
- Level passive open grassed areas around 50m. by 30m., for unstructured activities (e.g. football, soccer, baseball),
- May require shade structures and park architecture
- May require public art or historical display features
- Park identification signs and signs for information and regulations
- May include Shaped landforms, berms and drainage swales
- Areas of tree preservation or rehabilitation planting
- Planting designs of trees and shrubs to provide shade, interest and emphasis within the park
- Sub-surface storm and sanitary sewer systems
- 50 mm diameter water service and utility building for irrigation and water play infrastructure
- May require Single-Phase Electrical Supply and walkway lighting systems with isolation circuit
- Parking on street or on adjacent school facilities

D. Parkettes

LANDSCAPE and DESIGN GUIDELINES

- Designs shall include sustainable features including recycled products, water and energy conservation features and locally manufactured products wherever possible
- Playground apparatus including junior and senior play elements
- Pathways, sitting areas and park furnishings (e.g. benches, garbage facilities)
- Passive open grassed areas for unstructured activities
- May require shade structures and park architecture
- Park identification signs and signs for information and regulations
- May require areas of tree preservation or rehabilitation planting
- Planting designs of trees and shrubs to provide shade, interest and emphasis within the park
- Sub-surface storm and sanitary sewer systems
- 50 mm diameter water service and utility building for irrigation and water play infrastructure
- May require Single-Phase Electrical Supply and walkway lighting systems with isolation circuit (if deemed required)
- Parking on street or on adjacent school facilities

6.3.2 Park Concept Plan and Facility Fit

Working with the staff, the design guidelines and the relevant planning documents, the developer shall engage the professional services of a qualified, O.A.L.A. registered Landscape Architect to prepare a **Park Concept/ Facility Fit Plan** during the preliminary stages of engineering design and master servicing for the subdivision and the preparation of the Draft Plan of Subdivision.

The Concept Plan shall demonstrate, at a minimum, that:

- Park configuration and size is suitable to accommodate the park design program as modified by the Township from time to time,
- Sufficient setbacks as depicted and described in the Township's Standard Details (Section 3.0 of this manual) are possible to buffer residents from active recreational uses.
- Setbacks for active facilities shall generally be a minimum of 20 metres from residential property to the edge of the recreational use and 15 metres from the street line of neighbouring roads. Setbacks for specific facilities are described in section 2.4.4 herein and may be listed on standard drawings.
- General setbacks shall not limit the flexibility of Township in determining larger or smaller setbacks as may be deemed reasonable for the design of individual park programs and circumstances.
- Any baseball fields shall be situated far enough away as well as oriented and arranged in such a manner so as not to impact adjacent residential properties.
- Orientation of facilities and layout meets with Township standards.
- Tree preservation requirements will be addressed in accordance with the approved Tree Preservation Plans and related documents as submitted for the subdivision
- The general relationship of park grading and drainage to the surrounding subdivision conforms to Township requirements and general approval.

- Display any encumbrance made necessary by the development engineering of the subdivision
- Required services for the future construction of the park are verified and generally located on the Concept Plan
- Surface and sub-surface storm-water and sanitary drainage systems are available and can accommodate the predicted needs of the park development.
- The Developer is responsible to secure any relevant approvals from all agencies (Hydro, Pipelines etc.) that may be affected by the plan.

The developer/builder shall be required to display the approved Park Concept Plan in project sales offices. Any misrepresentation of the park design, or misleading portrayal of park amenities displayed in sales pavilions or advertising media shall be the sole responsibility of the developer/builder.

6.3.3 Construction Drawings

The developer shall engage the professional services of an O.A.L.A. registered Landscape Architect to prepare Detail Design/ Technical Drawings to fully describe the construction of all park features.

The following drawings shall be included at a minimum for all parks to be constructed, whether by the municipality or by the developer on behalf of the municipality:

- a) Existing Conditions Plan: Plans and construction drawings are to be prepared utilizing current engineering base information completed for the subdivision design along with current OLS survey information for existing legal boundaries and survey monuments and topographic features, spot elevations and contours. Such information shall include all features unique to the block of land including existing vegetation and geodetic elevations at the base of individual specimen trees.
- b) Layout Plan: the plan shall present an accurate representation of all works to be constructed for the park complete with dimensions and offsets tied to known legal lines for the block. Park facilities are to be shown in conformance with the minimum standards developed by the Township for facility layout. All materials and finishes for the park development are to be labelled and construction details cross referenced to Township of Woolwich standards or other technical details as may be suitable and required.
- c) Grading Plan: the plan shall show current geodetic information of the existing grades and conditions. Grading plans shall show the ultimate finished grades for all facilities and components of the proposed park. Grades shall be shown for all sports-fields and shall illustrate current standards for field grading and drainage in accordance with Township Standards. Grading design shall be done in recognition of the pre-grade conditions and

structural fill preparation established for the park. The grading plan shall show all areas requiring additional engineered fill for construction of the park facilities. Spot elevations shall be shown to adequately describe all pathway construction, curbs, walls and edges and drainage swales through soft landscape areas. The grades to be achieved at drainage inlets are to be clearly shown on the plans.

- d) Servicing Plan: the plan shall show all necessary underground servicing to allow for the function of park facilities in accordance with current codes and best industry practices. The Servicing plan shall show all services, connections and crossings within the park block in context to each other and the development of the park and its features. Sewer systems shall be illustrated complete with descriptions of pipe materials and dimensions as well as all pipe crossing and inlet invert elevations. Local sub-drains required for park facilities are to be illustrated as to their location and connection to the main system of drainage. Water supply systems shall be illustrated with all necessary pipe dimensions, backflow prevention devices, chambers, meters, pipe reducers and appurtenances. All cross references for details and OPSD are to be clearly understood from the plans.
- e) Planting Plan: Plans will be prepared illustrating all tree, shrub and groundcover plantings proposed for the park. Plantings shall be accurately represented as to the extent of planting beds and the location of specimen trees relative to park features, servicing and paving. The planting plan shall include the contour grades of the proposed park development to ensure accuracy of context for planting. Particular care is to be taken in the selection of plant species to conform to the details and standards of the Township and the intent for landscape development in context to the surrounding environment as expressed in Section 1 herein. Emphasis is to be placed upon the inclusion of native and indigenous species in park designs and to limit the extent of maintenance required to manage the park effectively. All areas of seeding and sodding shall be illustrated clearly by the plan.
- f) Irrigation Plans and Details (Where required): Irrigation Plans are to be produced by a Certified Irrigation Designer in general conformance to the standards of the Township. The irrigation plan is to be specifically reviewed with Township operations staff to ensure the proposed equipment and controllers are complementary to existing systems currently maintained by the Township and that systems represent current technology for water conservation. The Township encourages the design of irrigation systems supported or entirely operated through the conservation of rainwater or water generated by other park facilities.
- g) Electrical Plan (Where required): Plans are to be prepared by an independent electrical consultant with established municipal experience in the design of lighting systems for parks. The plan shall be prepared detailing the location and type of all walkway, parking area and sport lighting poles and fixtures. Plans and details shall be in conformance with the standards of the Township and shall reflect current rules and regulations with respect to electrical design. All lighting shall be LED. Electrical designs are to promote energy efficient and increased sustainability systems such as solar powered systems.

- h) Construction Details: Detail drawings are to be provided to fully explain the methods of construction for all elements of the park. The details shall, at a minimum, comply with the performance standards established in the Township's construction detail standards as shown in Section 3. Other details as may be necessary to explain the full extent and implications of the park construction shall be included for the review of the municipality and its departments. Any overhead structures and load-bearing foundations are to be reviewed and certified by a Structural Engineer.
- i) Asset Drawings: An ARCGIS shapefile shall be provided of the as constructed plan in accordance with the Township standards outlining:
 - a. All plantings (trees/ shrubs)
 - b. Limits of any gardens
 - c. Play equipment
 - d. Surface treatments
 - e. Identify maintenance area (mowed, snow cleared or naturalized)
 - f. Parking/driveways
 - g. Sport fields
 - h. Fencing
 - i. Benches
 - j. Or any features within the park
- j) Sustainability Report: To provide a report as to how the parks and facilities have been designed in a sustainable manner. The report will include how the plans provide the necessary spaces, shade, plantings, but also how the sites have been designed to balance long term maintenance of elements in the parks/ facilities in a cost-effective manner.

Drawings shall be prepared at a maximum metric scale of 1:400 in AutoCAD format and shall be submitted on disk to the Township in a format compatible to the Township's GIS mapping systems wherever possible. Such drawings are to be submitted at the time of issuance for tender and at the completion of construction as "As-Built" records, to be retained as a permanent record for the project.

Where deemed necessary by the Township in the design of Community and Township-wide parks, the developer will retain the services of a professional engineer to perform storm sewer design for the park including sizing of pipe, catch basin elevations and inverts, to be coordinated with the grading plans of the subdivision. Professional fees associated with the engineering component of the detail design of the internal park services will be the responsibility of the Township.

6.4 Design & Construction Standards

The Township of Woolwich has established minimum standards for park design and construction. These form Section 3 of this manual and are subject to update from time to time. Applicants and consultants are to assure themselves that they are working from the most current versions of these documents in the preparation of park plans and construction documents for submission to the municipality.

These details are not intended to be prescriptive in all cases but rather are intended to assure a baseline of quality which may be improved upon at the suggestion of the applicant and with the agreement of the Township on a case by case basis. The general intent of the standards is to assure the appropriate configuration and construction of recreational facilities, the design of attractive and environmentally responsible parks and open spaces and to promote cost effectiveness and the reduction of long-term maintenance and life cycle costs. The following is a discussion of park development guidelines for which these standards can apply.

6.4.1 Sustainable Design

The Township of Woolwich encourages the inclusion of sustainable and “green” design strategies wherever possible. Park designs are to have regard for contemporary approaches to sustainable design wherever possible. Designs shall promote the use of native plant materials; the reduction of maintenance loads and machine use; the conservation of storm water and its quality treatment in on site devices such as bio-swales and infiltration galleries; the re-use of potable water through greywater and other water re-use systems; the use of durable recycled products for site furniture and park features; and the use of locally produced products for energy conservation and support of the local economy.

6.4.2 Public Safety by Design

Design of park features and recreational facilities shall conform to local, provincial and national regulations and recommendations for the health and safety of park users and those who maintain park systems. Contemporary standards for playground safety as well as current accepted standards for setbacks and run-out areas for active sports facilities are to be applied to the design of parks. Park design shall have regard for the inclusion of the recognized approaches and principles of Crime Prevention Through Environmental Design (CPTED).

6.4.3 Design for Accessibility

It is the policy of the Township to provide barrier free access to all municipal facilities wherever it is practicable and wherever possible to design parks for the universal use and appreciation of all constituents. Park design will address barrier free access by eliminating or providing alternatives to stairs, curbs and other obstructions. Such alternatives shall be in conjunction with the primary circulation route wherever possible rather than separated by significant distances. The experience of the park is to be similar for all users regardless. Park design should also consider the inclusion of features, activities and facilities to engage the full range of users.

Considerations of sensory gardens and other similar integrated design elements are encouraged to provide a complete and inclusive park experience for all potential visitors.

- All park facilities including athletic fields will be accessible wherever possible.
- Playground structures for Neighbourhood Parks are not typically to be fully wheelchair accessible but should present opportunities for universal play in their ground accessible elements. Full accessibility is encouraged for these facilities if it can be accomplished within the budgetary constraints of the individual project.
- True universality of play areas is intended for the higher classifications of Community and Township Wide Parks. These parks may offer associations with a Community Centre or other public building offering support for special needs requirements and may be sites for organized, inclusive, programming.
- Pavements within parks are to be barrier free. Trails are to utilize barrier free pavement surfaces to the extent possible for the type/class of trail being constructed.
- Maximum slope for ramps and walkways will conform to the Ontario Building Code, Township Accessibility Standards, and compliance with the AODA.

6.4.4 Site Grading and Drainage

Responsibility for site grading and subsurface drainage design is shared between the developer and Township. Grading and drainage is to be undertaken in accordance with construction drawings and specifications as prepared by a qualified Landscape Architect. Standards to which earthworks are undertaken shall respond to the structural integrity requirements of facilities and the future maintenance requirements of the Township.

- Subsurface drainage and sewer works will be installed complete with the required catch basins, manholes and connection to subdivision storm sewer system.
- Grading design is to be developed to afford sheet drainage of water wherever feasible in order to facilitate infiltration for surrounding soils. Sheet drainage shall be designed in a reasonable and sensible fashion within sub-drainage areas of the park block. It is not the intent to avoid a sewer system but to achieve balance between the use of overland flow and piped systems. Grading shall ensure that drainage is contained within the park block and is not shed onto neighbouring private properties.
- Drainage requirements of the park will be determined early in the engineering design process of the subdivision to eliminate the use of culverts. Catch-basins/ inlet structures are to be placed at sufficient intervals and in sufficient quantity to ensure that there are no areas of trapped drainage within the site and to avoid deep swales with steep side slopes.
- Engineered fill, free of Topsoil organics is required underneath all paved surfaces, playgrounds and ball diamond infields. Fill is to be placed and compacted to 95%

S.P.M.D.D. in 200mm lifts. Completed filling works are to be tested and the results submitted to the Township.

- Turf-grass swales should be graded to a 2% slope along their length whenever possible. 1.5% slopes may be accepted over short distances to avoid overly steep side slopes for swales.
- Slopes and berms should be graded to a maximum 4:1 slope for ease of maintenance. Level turf-grass areas (except purpose-designed athletic fields) should have a minimum slope of 2% for drainage purposes.
- Natural turf sport fields should be graded to 1.5% slopes and crowns as described by technical drawings.
- Topsoil depths of 0.6 metres is required under all grassed and landscaped areas where no future parking, buildings or development is proposed. Topsoil must be placed in uniform compacted layers. A balanced grading program of topsoil stripping and sub-grade cutting and filling is to be undertaken for a park development. Trapped pockets of organic material are not to be created. Deeply excavated, isolated areas and areas of significant grade change are not to be filled using topsoil.
- Topsoil depths in areas for future development of parking areas, play structures and buildings etc shall not exceed 15 cm.
- All park areas are to be finished with fine grade and sod with the exception of preserved natural areas and areas of environmental rehabilitation.

6.4.5 Setbacks to Facilities

All recreation sport field facilities including run-out areas, playgrounds and play courts will be sited so as to ensure a minimum setback from the facility perimeter to adjacent residential property lines of 30 metres for ball diamonds and 20 metres for other facilities. This space may contain grading, drainage and buffer planting as required to ensure the performance of the facility and the protection of adjoining facilities or properties. Athletic facilities shall be designed in consideration of the impacts of the activity of the game-play and will generally not be sited directly adjacent to roads where this setback must be increased to 40 metres or 2.4-metre-high fencing provided to prevent conflict with traffic.

6.4.6 Athletic Field Facilities

Sports fields should be sited in their most favourable orientation and with symmetrical grading design. Design is to consider configurations that will minimize noise disturbance to adjacent residents. Field dimensions may vary with classification and use but must always include the required clearance from neighbouring properties and adjacent park uses. The relationship and foul ball risks associated with the placement of backstops will be carefully considered to avoid risk impacts on other park facilities and neighbouring residential. Lighted sports fields may be provided only in Community or Township-Wide parks and shielded, LED, dark sky compliant lighting will be provided to prevent spillage onto adjacent residential properties. Lights will be

controlled by activation circuits and timers for automatic shut-off at park closing hours. Tower field lighting will not be permitted unless required and approved by the Township.

Ball Diamonds

- Field measurements are to be in accordance with the appropriate Township standard detail for the level of play provided.
- Run-out area shall be 6 metres around perimeter containing no grade changes or obstacles. The perimeter of the outfield is to be assumed as extending from the line of the backstop and line fence.
- Home run fence in outfield allows run-off distance to be reduced to perimeter line.
- Home run fence to be 1.5m minimum in height.
- Optimum orientation should place home plate facing to the north-east.
- Orientation shall direct the field away from neighbouring residential, and shall not require the installation of protective mesh for the outfield.
- Grading to be crowned at centre-line or sheet draining from infield to outfield.
- Infield should be centre crowned from the pitching location at 2%.
- Outfield is to be centre crowned at minimum 1.5% consistently from infield to outfield fence to avoid grade separation of outfield positions.
- Engineered fill is required under entire infield to sub-grade level to accept infield mixture depths, and for backstop and bleacher sitting areas.
- Topsoil depth in outfield may exceed 200mm in uniform consistent depth with no isolated topsoil pockets.
- Backstop and line fence footings are to be founded in suitable soils. Size and dimension of footings for structure bearing posts and supports are to be reviewed by a Structural Engineer based upon soils testing for the site.

Soccer Fields

- Field measurements are to be in accordance with the appropriate Township standard detail for the level of play provided with 5 metre run-out areas for field perimeters.
- Orientation of north-south direction between goals is considered optimal for sun orientation.
- Grading – centre-crowned and sloping to sides at maximum and minimum 1.5 % slope for natural turf fields.
- Non-crowned fields are not acceptable for senior play.
- Senior competitive fields are to be irrigated and sub-drained. Fields may be constructed of specialty sand/soil mixes where recommended and directed by the Township.

6.4.7 Playgrounds

Playgrounds are to be set back 10 metres at their perimeter from any residential property lines. Play areas are to be set back from street lines of local roads by a minimum of 15 metres and 20 metres from the street line of a collector road where the boulevard will also act as a buffer. Grading around playground areas is to be designed to allow visual surveillance into the play area from the road and surroundings. No dense landscaping will be planted near playground areas where views may be obstructed, and safety of users be affected.

- Playground equipment design will suit the age group intended to be served.
- Playgrounds shall include safety signage indicating the appropriate age range for the use of the equipment and contact information for the Township with regard to maintenance and security.
- Equipment design and clearances are to conform to CSA standards, latest edition.
- Resilient surfacing is to conform to C.S.A. Standards for the drop-heights included in the equipment provided.
- Sub-surface drainage is to be provided. Where drainage from the playground is directed to a storm catch basin, the drainage pipe is to have at a minimum a 1% slope.
- Sitting areas are to be provided within a hard surface area to allow for ease of supervision for the entire play area.
- Shade is to be provided through a structure or shade-trees within easy reach of the play areas.

6.4.8 Hard Surface Play Courts

Tennis courts, basketball courts and other multi-purpose hard surface play areas may be provided in Community Parks where sufficient space separation is available to minimize noise impacts from bouncing balls on adjacent residential neighbourhoods and where a reasonable space separation is possible from children's playground equipment.

- Tennis, Basketball and Multi-purpose Courts - Asphalt or concrete surfaces to be of fine grade HL3A draining at maximum 1.5% slope. Sub-base materials to be as required by details and soil conditions. Where budget allows concrete underlay to court surfaces or flush concrete curbs are recommended.
- Tennis court fencing to be 3 metre high, black chain link with terminal posts and gates (as per Township fencing standards).
- Posts to be set in concrete footings poured the full depth of 1.2 metres below finished grade with tops of footings trowel finished.
- Tennis nets will be installed for seasonal use only. Net posts shall utilize a sleeve and cap system for removal and storage of the nets seasonally or for multi-use court play on the surface.
- Line painting provided by 50mm wide white (and/or yellow for multicourt) durable traffic paint.

- Colour coatings are an optional feature where deemed appropriate for competitive tournament play or where design suggests.

6.4.9 Water Spray Features

Spray pads or similar water play features may be provided by third parties in Community Parks or those Neighbourhood Parks. The third party will be required to undergo site plan approval process to ensure the design and installation is the satisfaction of all applicable agencies and departments.

6.4.10 Seating Areas

Benches, waste receptacles, bicycle racks and picnic tables will generally be provided in park shelters along pathways and at activity locations in support of uses within the park. Park furniture will be selected and approved on a site by site basis and in response to specific urban design and community design policies for the area. Furnishings for general use are to be cost-effective, durable and vandal resistant using recycled materials wherever possible. Site furniture for high profile sites and historical areas shall be selected in response to the specific design theme and historical reference of the area they are installed. No site furnishings will be provided in secluded or remote locations where social gathering is deemed undesirable.

- Seating areas will be provided in association with active and intensive park uses.
- Trees will be planted near seating areas to provide shade for comfort of users.
- Benches selected should be comfortable, durable, low maintenance and vandal resistant (Township approved)
- Waste receptacles should be provided (Township approved).
- Site furniture will be permanently mounted onto a concrete slab or concrete footing.
- Picnic tables will provide for barrier free access.

6.4.11 Parking Areas

Typically, parking lots will be paved in asphalt with a cast-in-place concrete barrier curb or defined by precast/recycled concrete bumper curbs. The use of permeable pavings and designs promoting storm water infiltration for parking area construction is encouraged by the Township. Granular parking lots may be provided in less formal parklands and open spaces and where it is deemed that the characteristic of free-draining granular is more desirable. Parking stalls shall generally be 2.75 metre x 6 metre with a 6 metre wide circulation lane.

- Parking lots within parks are not maintained in winter except if associated with a specific trail head area or a school for year-round use.

- Subsurface drainage and connection to storm sewer is typically required for all parking lots enclosed by a poured concrete curb, with surface draining toward the inlet structures at 2% minimum slope.
- Poured barrier curbs shall be a minimum of 150mm above finished surface of asphalt parking lot.
- Dropped/depressed curbs are to be a minimum of 2.5 metres width and will be provided in direct association with handicapped parking stalls, with appropriate connection to walkways.
- Handicapped parking spaces will measure meet the zoning and accessibility standards with appropriate pavement markings and will be signed accordingly.
- Handicapped parking spaces should be provided at a rate of 2 spaces for each Community Park and at Neighbourhood Parks as requested on a site by site basis or as required under site plan for adjoining school sites.
- Line painting (100mm wide) will be provided on asphalt surfaces to identify each parking stall using white O.P.S. standard traffic paint.
- Granular Parking Lots shall have pre-cast concrete or recycled plastic bumper curbs, each to identify one parking space.
- Curb units are to be pinned in place 300mm inside of perimeter of the parking area to afford ease of edge maintenance and grass cutting.
- Granular parking lots will be graded to sheet drain at minimum 2% slope to drainage swales or directly to the surrounding landscape.
- Granular base shall be a minimum compacted depth of 250mm depth of approved coarse aggregate compacted to 98% Standard Proctor Density.
- Paving surface should be two courses of asphalt (30mm HL3A and 50mm HL8).
- Compaction and materials testing is to be carried out and all base material and paving certified by an accredited testing agency.
- Gravel parking lots will have a minimum 250mm depth of approved coarse aggregate finished with a 50mm layer of 19mm crushed stone compacted to 98% Standard Proctor Density.

6.4.12 Pedestrian Walkways

Walkways should be provided within parks to connect recreation facilities or to provide amenity and accessibility to passive areas in a convenient, safe and barrier-free manner. Parks should have a defined entrance visible within the streetscape. The park entrance should be visible and convenient with regard to access to the site and the likely desire lines expected from park users.

Park users should have a clear view of approaching pedestrian and vehicular traffic on adjacent roadways. Proper connections will be made to municipal sidewalks, roadways, and open space linkages where appropriate. Seating areas and other pedestrian pavement surfaces may be of asphalt, concrete, unit paving or combination thereof, as dictated by site conditions and design intent.

- Typically park walkways shall be paved and are to be 2.4 metres in width for pedestrian use and 3.0 metres wide for a primary route areas where they also serve to provide access for park maintenance service vehicles
- Walkways should be paved with two courses of asphalt (30mm HL3A and 50mm HL8), over a 250mm thick compacted base of 19mm diameter Crusher Run Limestone.
- Pedestrian walkways that also serve as primary maintenance routes shall be heavy-duty pavement with a thickened sub-base of compacted granular (250mm of 50 mm dia. and 150mm of 19mm dia. crusher run limestone) and two lifts of asphalt paving – (60mm HL8 base course and 40mm HL3A wearing course).
- Compaction and materials testing is to be carried out and all base material and paving certified by an accredited testing agency.
- Walkways will be crowned or cross sloped at 1% minimum drainage. Maximum slopes of pedestrian surfaces will conform to Ontario Building Code
- Asphalt edges will be tamped to a 45-degree angle, and adjacent sod will be installed 25mm below finished surface of walkway so as not to trap water on the pathway surface.
- Walkways may require centre line painting (OPS standard traffic paint), if required.
- Walkways will meet flush with sidewalks and other pavement surfaces with no tripping hazards and to provide barrier-free access for strollers, bicycles and wheelchairs.
- P-gates will be installed to restrict vehicular access onto pedestrian pathways, yet permit accessibility for strollers, bicycles and wheelchairs.
- Site drainage across pedestrian walkways will be permitted but designs are to ensure that no areas of trapped drainage are created on the site, causing water to pond and icing of the walkways.
- Site grading and sub-surface drainage systems will be utilized to minimize the use of culverts underneath walkways.
- Park pathways will typically not be maintained in the winter, except within a defined school route or neighbourhood destination. Municipal roads and sidewalks are to be the primary winter season access for the surrounding neighbourhood area.
- Walkway lighting should be provided when required by the Township and shall be installed in accordance with an approved lighting design plan.

6.4.13 Tree Planting

In addition to protecting the existing vegetation that is designated for preservation within parkland, new tree planting will be provided to support existing natural landscapes, remediate and recover existing landscapes, enhance community aesthetics and design objectives for the park, provide shade and shelter for park users, define space and to generally support

environmental quality. A mixture of deciduous and coniferous trees will be provided, in consideration of the facilities being accommodated and the intent of the park design.

- Emphasis is to be given to the planting of native trees and those indigenous to the area.
- Tree planting will be designed to allow visibility and surveillance into the park from the street and surrounding neighbourhood. Public safety will be considered through the principles of Crime Prevention Through Environmental Design (CPTED).
- Shade trees will be provided adjacent to sitting areas, parking lots and in other locations where comfort zones are desirable.
- Parkland will focus on accommodating a diversity of native trees, flowering species and specialty specimens which may not be typically used for street tree planting.
- Trees shall generally be a minimum 50mm caliper for deciduous shade trees, 40-50mm caliper for ornamental trees and multi-stem varieties, and 1.8 metres height for coniferous trees.
- At the completion of construction warranty periods, the Township shall replace dead trees in accordance with available budgets approved for such activity.
- Extensive shrub planting and floral displays requiring high levels of maintenance are to generally be avoided: except where approved as appropriate as features in Community or Township-wide Parks; or as gateway features approved in accordance with the municipality's ability to maintain them.

7.0 SUBDIVISION LOT AND BLOCK DEVELOPMENT

Within new developments the lots and blocks shall be designed and graded to the satisfaction of the Township. Final grades shall be in accordance with the approved grading and drainage plan.

Landscaped areas of the lots and blocks shall be developed to the following standards:

1. Prior to placement of topsoil the site shall be cleared of debris, rocks and other foreign materials and scraped/cultivated to loosen the sub-soils;
2. Topsoil shall be placed to a depth of no less than 0.6m., to a maximum of 0.9m., applied in layers;
3. Topsoil shall be imported screened topsoil, or native material stripped from the site, meeting the Landscape Ontario standards for topsoil being:
 - i. Topsoil shall be fertile, friable, sandy loam topsoil. Admixture of subsoil and shall be free of stone over 30 mm in diameter, debris, organic or other deleterious contaminants and fragments larger than 75 mm in size, plants or their roots, sticks, noxious weeds, salts, soil sterilants or other materials detrimental to plant growth.
 - ii. Topsoil shall have acidity range of pH 6 –7.5 and contain not less than 5% OM.
 - iii. Topsoil shall have a salt conductivity of less than 2 millisiemens/cm.

- iv. Soil Amendments shall be free from clay subsoil, sawdust, commercial wood products, stones, lumps, plants, roots, sticks, weed stolons and seeds, high seed content, chemical contaminants and other materials harmful to plant life.
 - v. Topsoil and soil amendments should meet the mechanical analysis as set out in the Landscape Ontario Standards;
4. Lots shall be sodded after topsoil has been installed; and
 5. Final grades shall be in accordance with the approved grading and drainage plan.

APPENDIX A RECOMMENDED STREET TREE PLANTING LIST

List of preferred species for Urban Trees

SPECIES CODE	LATIN NAME	COMMON NAME	Salt Tolerance	Native	Soil pH	Soil Moist- ure	Soil Compac- tion Tolerance	Shade Toler- ance	Flowe rs	Mature Size (m) (height & width)	Form	Planting Site Location
Aca	Acer campestre	Hedge Maple				D		T		10x10	R	1,2,3,4
Af	Acer x freemanii	Silver/Red Maple				W,A,D						3,4
Afar	Acer x freemanii 'Armstrong'	Armstrong Maple				W,A,D						3,4
Ag	Acer ginnala	Amur Maple			6.1-7.5	A				7x7	R	1,2,3,4
Ar	Acer rubrum	Red Maple	S	X	4.5-6.5	W,A	I			17x15	O	3,4
Arb	Acer rubrum 'Bowhall'	Bowhall Maple	S	X	4.5-6.5	W,A	I			17x15	O	3,4
Arf	Acer rubrum 'Frank Jr.'	Redpointe Maple	S	X	4.5-6.5	W,A	I			17x15	O	3,4
Asa	Acer saccharinum	Silver Maple		X	4.0-7.3	W,A						4
Asas	Acer saccharinum 'Silver Queen'	Silver Queen Maple				W,A						3,4
As	Acer saccharum	Sugar Maple	S	X	6.0-7.5	W,A	S	T		20x15	O	3,4
At	Acer tataricum	Tatarian Maple										2,3
Ac	Amelanchier canadensis	Serviceberry	T	X	6.0-6.5	W,A	S	T	X	8x3	O	1,2,3,4
Cb	Carpinus betulus	Hornbeam										2,3
Cbf	Carpinus betulus 'Frans Fontaine'	Frans Fontaine Hornbeam										2
Co	Celtis occidentalis	Common Hackberry	T	X	6.0-6.5	W,A,D	M	M		20x18	R	4
Cl	Crataegus laevigata 'Paul's Scarlet'	Paul's Scarlet Hawthorn				D			X			1,2,3,4
Gbp	Ginkgo biloba 'Princeton Sentry'	Princeton Sentry Ginkgo	M		4.5-7.0	A		S		17x11	I,P	2,3,4
Gbp	Ginkgo biloba 'Saratoga'	Sartoga Ginkgo	M		4.5-7.0	A		S		17x11	I,P	3,4
Gt	Gleditsia triacanthos var. inermis 'Skycole'	Skyline Honeylocust	T		6.0-7.5	W,A,D	T	S		15x13	P	3,4
Gt	Gleditsia triacanthos var. inermis 'Draves'	Street Keeper Honeylocust	T		6.0-7.5	W,A,D	T	S		15x13	P	3,4
Gme	Gymnocladus dioica 'Espresso-JFS'	Espresso Kentucky Coffee Tree	T			A,D	T	S				3,4

Ltf	Lirodendron tulipifera 'Fastigiatum'	Columnar Tulip Tree	M			A	T					2,3,4
Mr	Malus 'Royal Raindrops'	Royal Raindrops Crab Apple	T		5.5-6.5	A,D	I	S	X	20x15	R	1,2,4
Ns	Nyssa sylvatica	Black Gum	T	X		W,A,D						3,4
Pab	Platanus x acerfolia 'Bloodgood'	Bloodgood London Plane Tree	M		5.5-7.5	W,A		S				3,4
Pa	Platanus occidentalis	Sycamore	S	X	6.5-8.5	W,A	T	M		35x20	O	3,4
Po	Populus tremuloides	Trembling Aspen	M	X	4.3-9.0	W,A						4
Pr	Prunus Rosaceae	Japanese Cherry Tree	S			A			X	6x5	F	1,2,3
Pc	Pyrus calleryana	Calleryana Pear							X	13x7	O	2,3,4
Ov	Ostrya virginiana	Ironwood		X	4.2-7.6	A		T				2,3,4
Qa	Quercus alba	White Oak	M	X	4.5-6.8	A,D						3
Qac	Quercus alba x robur 'Crimschmidt'	Crimson Spire Oak	M									2,3,4
Qb	Quercus bicolor	Swamp Oak	M	X	4.5-6.5	D				15x15	R	4
Qm	Quercus macrocarpa	Bur Oak	T,M	X	4.0-8.5	W,A,D	S			18x13	O	3,4
Qr	Quercus robur	English Oak	T		5.0-7.0	A	S	S		18x13	R	3,4
Qrf	Quercus robur fastigiata	English Pyramidal Oak	T		5.0-7.0	A	S	S		15x5	F	2,3,4
Qru	Quercus rubra	Red Oak	T	X	4.5-6.5	A	S	T		16x15	R	4
Saf	Sorbus aucuparia fastigiata	Pyramidal European Mountain Ash	M						X	11x2	F	2
Sd	Sorbus decora	Showy Mountain Ash	M	X	4.0-7.0	W,A			X			1,2
Stf	Sorbus thuringiaca fastigiata	Oakleaf Mountain Ash	M						X	7x3	F	1,2,4
Sr	Syringa reticulata 'Ivory Silk'	Japanese Ivory Silk Lilac							X			1,2,4
Ta	Tilia americana	Basswood	M,S	X	6.5-7.5	A	S			25x13	P,R	3,4
Tcc	Tilia cordata 'Corzam'	Corinthian Linden	M,S		6.5-7.5	A	S		X	25x13	P,R	2,3,4
Tch	Tilia cordata 'Halka'	Summer Sprite Linden	M,S		6.5-7.5	A	S		X	25x13	P,R	2,3,4
Uav	Ulmus americana var. resil	American Elm, DED resistant variety	M		5.0-8.0	D						3,4
Up	Ulmus propinqua 'JFS-Bieberich'	Emerald Sunshine Elm	M		5.0-8.0	D						3,4
Zs	Zelkova serrata	Zelkova			6.0-6.9							3,4

All Fraxinus Species Are Temporarily Prohibited Due To Emerald Ash Borer Infestation In Waterloo Region

All Pyrus Calleryana (Pear) including Bradford Pear, Callery Pear, Chanticleer Pear and other such cultivars are no longer permitted due to potential invasiveness of the species.

Common Hackberry removed from the street tree list aggressiveness as a street tree. Remains permitted in Parks.

SALT TOLERANCE, S - Sensitive, M - Moderately Sensitive, T - Tolerant

SHADE TOLERANCE - T-Tolerance to Shade, M -Moderately Tolerant of Shade (Semi-shade), S -Sensitive to Shade

SOIL pH, On scale of 1.0 (acid) to 14.0 (base) with 7.0 (neutral)

FORM - O-oval, R-round, F-fastigate, I-irregular, P-pyramidal

SOIL MOISTURE, W - Moist, A - Average, D - Dry

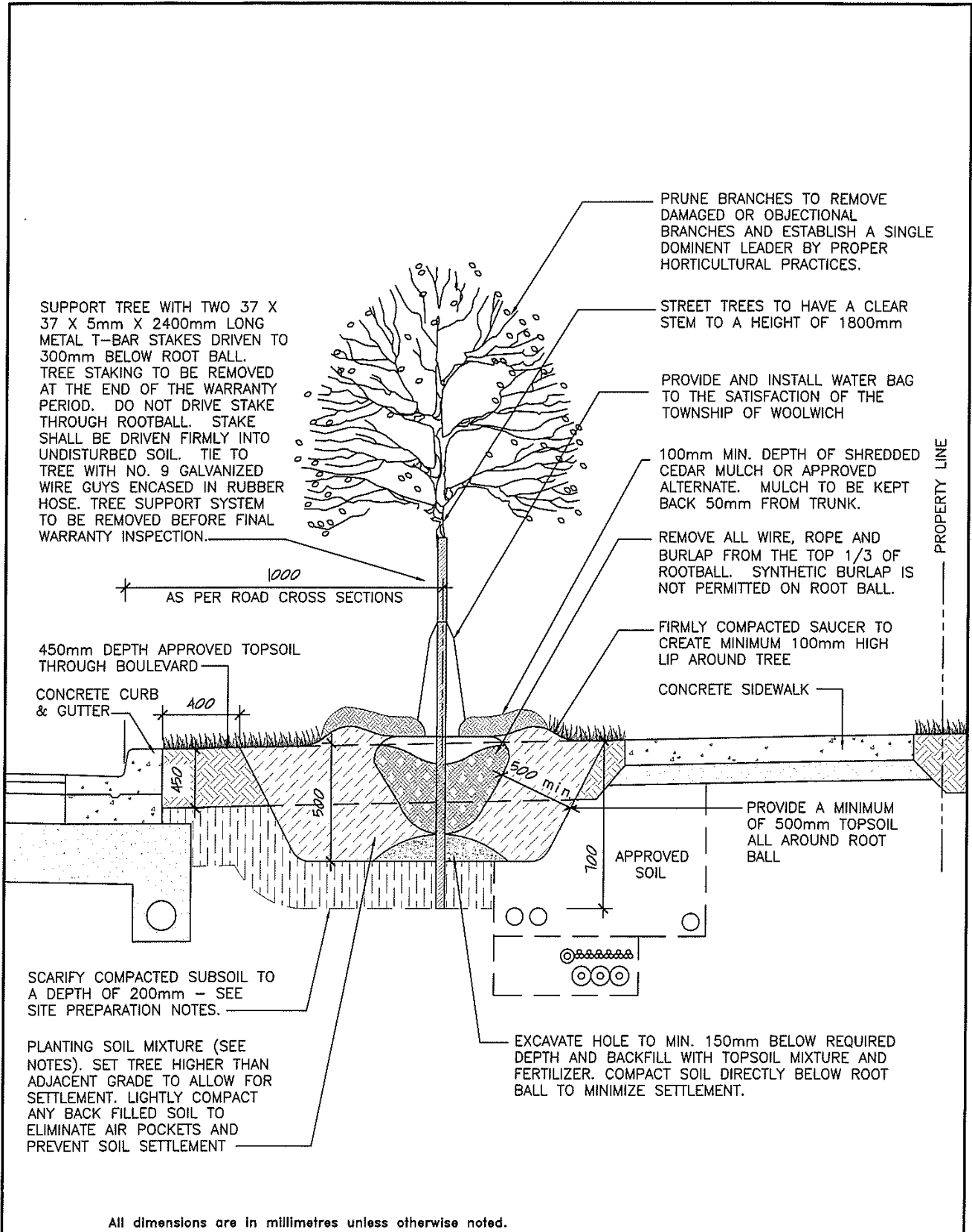
PLANTING SITE LOCATION - 1 - Under Utility Lines, 2 - Center Median Plantings, 3 -Street Tree, 4 -Park Plantings

SOIL COMPACTION TOLERANCE, S - Sensitive, M - Moderately Sensitive, T - Tolerant

TRANSPLANTING EASE, S - Sensitive, M - Moderately Sensitive, T - Tolerant

Yellow New Additions

This list is not all inclusive, and other trees appropriate to the zone and location as per the, “Recommended Urban Trees: Site Assessment and Tree Selection for Stress Tolerance Urban Horticulture Institute Department of Horticulture, Cornell University, Ithaca, New York”, may be permitted.



TOWNSHIP OF WOOLWICH		REVISION NO.
DRAWN	BOULEVARD TREE PLANTING DETAIL	DATE
APPROVED		DET -19-03
DATE SEPTEMBER 2019		