MILTON

Engineering and Parks Standards Manual

Part 5

2024 - September

Parks and Open Space

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5.0 Table of Contents

5.1 Park Classifications

Parks are an essential and vital component of a well-planned community. They provide opportunities for both residents and visitors to explore the Town and to have social, educational, and recreational experiences in a designed outdoor setting.

The Town's Parks and Outdoor Recreation Hierarchy recognizes the importance of recreation facilities and park amenities to ensure that a range of distinct outdoor active and passive uses are available for existing and future residents. A fundamental element of the overall Hierarchy is the Town's park classification of Core Park Types. The Core Park Types are lands primarily developed by the Town and includes the Community, District, Neighbourhood, and Village Square park types.

The Core Park Types are intended to be unencumbered tablelands exclusive of hazards or naturalized lands, suitable for public use and capable of meeting the technical requirements required for development of the broad range of facility needs in Milton's outdoor recreation service level.

Facility fit drawings adhering to the Town's standard drawings, technical and background studies, in addition to detailed engineering and landscape design drawings, are used to confirm that the acreage and configuration of proposed lands are suitable for conveyance to the Town for park or other public recreational purposes, and to determine the Owner's responsibilities with respect to the Base Condition works associated with conveying the lands to the Town.

Through other provisions, the Official Plan recognizes the community benefits of passive outdoor use, active transportation, trail networks, the natural heritage system, and open space linkages that are made available through other types of Town lands and publicly accessible spaces. These other lands are deemed complementary to, but distinct from, the Town's Core Park Types.

Each park is unique in its size, context, and use. The key characteristics of each park type are outlines in this section.

5.1.1 Key Characteristics Common to All Park Types

The location and programming of parks will be determined using a comprehensive open space approach of connecting park blocks, natural features, and Town facilities with pathway/trail systems, bicycle routes and sidewalks to meet the needs of the community.

All parks will include a pedestrian circulation system including a major paved pathway at a minimum of 3.0 m in width connecting the main entrances to the main features and/or

facilities within the park. This main pathway may also serve as a multi-use path and maintenance vehicle access route. Parks may also include minor pathways a minimum of 1.5 m in width providing connections for secondary entrances and features.

A minimum of one vehicular access for maintenance is required for each park, and may require a curb cut. These vehicles may use the major pathway.

The Town will determine the level of winter maintenance required, if any, for each park on a case-by-case basis.

Refer to Section 5.4 (Base Condition) for the site servicing requirements of each park type.

5.1.2 Type 1 – Village Square

A Village Square is a small park typically located within each sub-neighbourhood as identified in the Town's Official and Secondary Plans. It is easily accessible to residents on foot or bicycle. Typically, a Village Square does not contain active recreational facilities and, because of their size, may not require naturalized areas. This type of park provides a passive recreational experience for local residents and their visitors. If possible, it will provide a link to larger open space/trail systems.

5.1.2.1 Key Characteristics

a. Items listed in Section 5.1.1 and the following:

- A typical size of 0.8 ha (2 ac)
- No parking provided within the park
- On-street parking on roads immediately abutting the Village Square will be considered on a case-by-case basis.

b. Upgraded level of park improvements may include:

- Trees of a variety of species for improved environment and visual interest
- Paved and illuminated pathways
- Seating areas with a variety of amenities (e.g., ornamental benches, decorative trash receptacles, and bike racks)

c. Fully developed, a Village Square may contain, in addition to the upgraded level:

- Play areas/playground equipment suitable for children of a range of ages and abilities
- Public art
- Ornamental floral displays
- Shade structures

5.1.3 Type 2 – Neighbourhood Park

A Neighbourhood Park is larger than a Village Square and is located centrally to a neighbourhood as identified in the Town's Official and Secondary Plans. It may be associated with elementary school facilities. Visitors may arrive by car, bicycle, or on foot. A Neighbourhood Park may contain active sports facilities such as soccer or ball fields intended for casual and programmed use between organized teams. The sports facilities may be illuminated.

Parking is provided within the park and/or in accordance with a shared parking arrangement with the nearby school(s). Supplementary on-street parking may be considered on a case-by-case basis. The amount and location of parking is determined by the number and type of sports facilities.

Neighbourhood Parks may contain naturalized areas to increase variety in the park's visual and ecological character. Naturalized areas may be centred on an existing woodlot, stream corridor, or hedgerow, or may be developed as an open meadow. Naturalized areas may be designed as a buffer to protect the edge of an existing natural area or feature. Regular maintained turf areas will be provided for the active facilities in the park.

Neighbourhood Parks may be linked to an open space system.

5.1.3.1 Key Characteristics

a. Items listed in Section 5.1.1 and the following:

- A typical size of approximately 3.0 to 4.0 ha (7.4 to 9.9 ac) or more as per facility fit requirements
- Paved parking provided within the park for general park users
- Turf areas

b. Upgraded level of park improvements may include:

- Trees of a variety of species for improved environment and visual interest
- Regularly mowed activity areas with less frequently maintained naturalized areas
- Paved pathways, illuminated
- Seating areas with a variety of amenities (e.g., ornamental benches, decorative trash receptacles, and bike racks)

c. Fully developed, a Neighbourhood Park may contain:

- Separate children's play areas (or structures)
- Active sports facilities (may or may not be illuminated)

- Spray pad, multi-purpose court(s), and gazebo/bandstand/shade structure
- Additional parking for each feature
- Additional signage such as neighbourhood history and/or interpretive panels
- Shade structure

5.1.4 Type 3 – District Park

A District Park serves the needs of several neighbourhoods. Its primary purpose is to provide active recreational facilities for organized sports, special events, and tournaments. District Parks will be accessible by bicycle or on foot along pathways and trails. A District Park may be located in proximity to a secondary school or Town facility.

A District Park may also be accessed by car and contain a parking lot because of its high level of use. The parking areas may be illuminated. The paved pathway system should link parking areas with various park facilities. The pathway system will also accommodate service and maintenance vehicles which will be required more frequently because of the higher volume of visitors.

The active sports facilities may include, but are not limited to, tennis, pickleball, soccer, baseball, cricket, and other active facilities to meet the community needs. These may be illuminated. Where possible, multiples of sports fields will be constructed to increase the opportunity for special events, and/or tournaments.

A District Park may contain large naturalized areas and may abut watercourses and natural areas.

A District Park will have intensively used, well-maintained, active areas balanced by naturalized areas requiring limited maintenance.

5.1.4.1 Key Characteristics

a. Items listed in Section 5.1.1 and the following:

- A park size exceeding 6.0 ha (14.8 ac)
- Parking provided within the park
- Mowed active recreation areas
- Naturalized areas
- Buffer zones between parking, lighting, driveways, and adjacent land uses
- Various outdoor recreation facilities

b. Upgraded level of park improvements may include:

- Trees of a variety of species for improved environment and visual interest
- A paved, illuminated, pathway system with major and minor routes throughout the park.
- Service vehicles driveway

c. Fully developed, a District Park may contain:

- Illuminated active sports fields, suitable for many simultaneous events
- Seating areas with a variety of amenities (e.g., ornamental benches, decorative trash receptacles, and bike racks)
- A park service building with a public washroom, storage for equipment, and shade/rain protection and/or picnic pavilion
- A comfort area or feature area with seating and ornamental planting highlighted by decorative materials and treatments
- Public art and/or ornamental floral display gardens
- Upgraded signage
- Major play structure
- Water play/spray pad
- Other unique recreational facilities

5.1.5 Type 4 – Community Park

A Community Park is the largest park classifications and may contain unique facilities serving or attracting the entire Milton community, such as an arboretum, museum, art centre, or amphitheatre. Community Parks may be part of a larger development which includes civic facilities such as a recreation or a community centre. Community Parks contain a large parking lot because of its high level of use, and may contain large formal landscaped spaces with decorative paving and site furniture to act as gathering or entrance plazas.

5.1.5.1 Key Characteristics

a. Items listed in Section 5.1.1 and the following:

- A park size 20.0 ha (49.4 ac) or larger
- Parking provided within the park
- Mowed active recreation areas
- Naturalized areas
- Buffer zones between parking, lighting, driveways, and adjacent land uses

b. Upgraded level of park improvements may include:

- A community facility such as a museum, a visual or performing arts centre, or a recreation centre
- Specialized landscape features complementing the programme of the building (e.g., patios, amphitheatre, or outdoor classrooms)
- Seating areas with a variety of amenities (e.g., ornamental benches, decorative trash receptacles, and bike racks)
- A large number of parking spaces for regular park visitors
- Illuminated parking areas
- An illuminated pathway system, linking parking with the building and other site features
- Multiple shade and/or picnic structures
- Major play structures in more than one location
- Spray pad
- Skate park

c. Fully developed, a Community Park may contain:

- Community-wide destinations such as botanical gardens, an arboretum, or an outdoor performance venue complementing the building program
- Public art
- Ornamental floral display beds or water feature
- Capacity for overflow parking for special events

5.1.6 Type 5 – Linear Open Space System

When available for public use, utility, railway, and other corridors provide significant opportunities for trails and open space systems. These corridors link all parts of new expansion areas with the remainder of the Town and its surrounding environment. Trail corridors provide essential connections to park facilities located in Neighbourhood and District Parks, and may provide a link between residential areas through Village Squares.

Where possible these linear corridors will connect to parks, providing non-vehicular access to the associated park amenities.

5.1.6.1 Key Characteristics

a. Items listed in Section 5.1.1 and the following:

- Corridors to vary in width as determined by the Town
- Trail corridors integrated with storm water systems and utilities
- Appropriate native and low maintenance seed mixes with mowed grass reserved for activity areas throughout the corridor
- Areas of mowed grass to be centred in the activity nodes throughout the corridor.

- No parking within corridor
- Fencing required along residential, commercial, industrial, and railway lands
- No fencing along edge of corridor if abutting street, except where necessary for safety at entrances or special features
- 3.0 m wide pathways

b. Upgraded level of a Linear Open Space System may include:

- A large variety of shade trees providing improved environment and visual interest, and some areas, trees planted in formal allées along the trail to accentuate the linear nature of the route or create gateway features
- A continuous trail, minimum 3.0 m wide, with asphalt surfacing, illuminated, with bridges and culverts at drainage swales
- Interpretive and directional signage

c. Fully developed, a Linear Open Space System may contain:

- Seating or rest areas with benches and trash receptacles placed at frequent intervals along the trail
- Special interpretive areas
- Defined entrances which provide easy access from the surrounding residential areas.

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5.2 Open Space Linkages/Pathway Blocks

5.2.1 Criteria

The Town requires that the Owner provide linkages as a safe and alternate access to public areas such as parks, stormwater management areas, and other open spaces to achieve the overall vision of park and trail connections.

These linkages provide access in the form of a pathway contained within an Open Space Linkage/Pathway Block or in conjunction with an otherwise required Servicing Block.

Open Space Linkage/Pathway Blocks will not be considered as part of the parkland conveyance for the development.

Where possible, overland stormwater discharge routes within residential areas shall also provide public access to parks and open space, thus providing a secondary function as an open space linkage. For these locations the Owner would provide a servicing block to the Town.

The Town will determine the level of maintenance to be provided for each linkage on a case-by-case basis.

5.2.2 Design

a. Linkages to parks, open spaces, and other public accessible areas will be designed on a case-by-case basis and will include the following considerations:

- Anticipated mode of travel
- Maintenance access and requirements
- Access control features such as bollards, gates, and/or signage
- Type of activity and programming within the linkage block
- Priority of access (i.e., whether the linkage is a primary or secondary access)

b. Minimum standards for park and open space linkages include:

- 1.5 m black vinyl chain link fencing along all perimeters that abut residential properties, installed 100 mm onto Town property.
- Asphalt paving for linkages that connect road to road. (Refer to TMSD 09-01.03.)
- A minimum 4.0 m wide block width with a minimum 3.0 m clear width of asphalt (or concrete) pavement for open space linkage/pathway blocks.
- A minimum 3.0 m clear width of asphalt, concrete, or other pavement type as required for engineering blocks designed to accommodate public access.

- Vegetative cover, to the approval of the Town, in areas that are not hard surfaced.
- Regulatory and maintenance signage as required.
- Lighting requirements for linkages must be accommodated within the linkage block.

5.3 Privately-Owned Publicly Accessible Spaces (POPS)

This section is intended to be completed in the future, upon approval of the Town's Privately-Owned Publicly Accessible Spaces (POPS) program.

POPS are a specific type of open space which the public is welcome to enjoy, but remain privately owned and maintained. Through future enabling policy and legislation, the Town will work with private developers to accommodate proposed POPS, where appropriate, as part of the development application and review process. Corresponding design and maintenance requirements will be included in this section.

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5.4 Base Condition

5.4.1 Criteria

The Owner is responsible to prepare all lands identified for park and open space conveyance in a condition (Base Condition) to the satisfaction of the Town. The timing of the preparation and conveyance of these lands is a fundamental component of the provision of Milton's parks and recreation facilities. As such, approvals by the Town for development will include conditions regarding the required Base Condition works and completion dates of these works.

Where conveyance of lands to the Town for park or recreational purposes has been identified for a development application, the submission of various drawings and supporting documentation is required. The Owner is encouraged to discuss these requirements with Community Services staff at the earliest stages of any development application.

Refer to Sections 2.2.1, 2.2.12, 2.2.17.3, and 2.3.4 for detailed information regarding the submission requirements for park and open space lands.

Park and open space lands are to be in a Base Condition to the satisfaction of the Town prior to conveyance, or at a time as otherwise specified at the Town's discretion.

The following items are critical requirements of these block(s):

a. The runoff coefficient for the park/open space block(s) must be in accordance with Section 4.5.4 (Storm Sewers), and must be adequate to meet the Park/Open Space Concept Plan.

b. Adequate capacity must exist in the storm sewer for the subdivision phase(s) to safely handle all stormwater runoff from the park block(s) and open space area(s).

c. Stormwater management and traffic management for any park and open space block shall be included as part of the overall subdivision design by the Owner. Design calculation certification letters, which indicates that the park/open space block has been included in the overall stormwater and traffic design for the subdivision, are to be submitted. The certification letters are to be sealed, signed, and dated by a qualified Professional Engineer.

The above noted requirements are part of the Park Construction and Methods Policy, approved by Town Council (September 8, 2008, or as revised). The Town reserves the right to update the Policy as needed to ensure that the above noted criteria are met for all development situations.

The Owner shall prepare and submit for review all drawings and cost estimates to the satisfaction of the Town. Refer to Sections 2.2.1, 2.2.12, 2.2.17.3, and 2.3.4.

The Owner shall undertake all base condition works as shown on the approved Park/Open Space Base Condition Plan to the satisfaction of the Town. All works must be completed and certified in accordance with the approved engineering and landscape drawings. All deficiencies must be addressed and re-certified as required to the satisfaction of the Town.

Certifications and As-Constructed Drawings depicting all Base Condition works are required at the time of conveyance to the Town. Refer to Section 2.2.17 (As-Constructed Drawings).

There may be situations when not all Base Condition requirements can or should be constructed by the Owner. Refer to Section 2.7.2 (Base Condition Cash Outs for Park/Open Space Blocks) for more detailed information about the cash out process and reasons for consideration.

5.4.2 Design

The Owner shall prepare a Park/Open Space Concept Plan(s) to the satisfaction of the Town for each park or open space area being conveyed to the Town. This plan is a facility fit of the proposed site programme on the proposed land with consideration for the surrounding development.

As identified by Community Services, this plan should indicate potential park driveway locations that meet Town standards. Park/Open Space Concept Plans are to demonstrate potential pathway connections to adjacent public school board lands. The need to submit this plan is identified by Community Services as part of a development application, and the plan is to be approved prior to detailed design stage of a development.

Drawing shall be sealed, signed, and dated by a qualified Ontario Landscape Architect.

The Owner shall also prepare an Interim (Base Condition) Grading Plan based on the approved Park/Open Space Concept Plan(s). Together, these plans form the basis for Town approval of lands as parkland conveyance and are required in the First Submission package. Refer to Section 2.2.13 (Subdivision Grading Plans) for more information.

The Park/Open Space Base Condition Plan is a composite drawing based on the approved Park/Open Space Concept Plan and Interim (Base Condition) Grading Plan. It clearly identifies all required works to be undertaken by the Owner to obtain Town acceptance. Each submission of this Plan is to be accompanied by a cost estimate

specific to the Base Condition works. This drawing, complete with the associated cost estimate, is required as part of the overall submission package. A complete drawing will be in accordance with all applicable standards and approved reports, and shall include the following:

a. Facility layout and site programme as approved on the Park/Open Space Concept Plan.

b. Grading design as approved in the Interim (Base Condition) Grading Plan.

c. Site servicing as identified by the Town.

d. Fencing design/layout.

e. Site identification and regulatory signage.

f. Vegetative cover.

g. Approved Site Plan or conceptual information for adjacent school properties (when applicable).

Future and potential pedestrian and vehicular entrances to the parks and/or open spaces are to be clear of sewer and/or utility appurtenances. This includes, but is not limited to, valves and chambers, manholes, catchbasins, light standards, traffic signage, bell pedestals and cable boxes, temporary or future community mail box locations, etc.

5.4.3 Drainage

The site drainage shall ensure positive flow within the site and connection to the surrounding storm sewer system. All park and open space drainage shall conform to standards within Sections 4.5.4 (Storm Sewers), 4.5.5 (Catchbasins and Ditch Inlets), and 4.5.6 (Manholes) at the discretion of Community Services.

Parkland shall be conveyed in a condition where no surface water is left standing in accordance with the Base Condition Grading Plan. The Owner is responsible for all costs associated with installing a drainage system to meet Town approval.

The Owner shall ensure that park blocks have 2.0% minimum surface slopes throughout, and will be required to use any surface and/or subsurface methods necessary (subject to approval by the Town), in order to achieve this minimum.

The Owner shall also supply and install a minimum of one property line storm manhole, which will be required to function with the approved Park/Open Space Concept Plan. Larger parks, including but not limited to District and Community Parks, may require more than one storm connection, each complete with a property line manhole.

(Refer to TMSD 05-04.01.)

The Interim (Base Condition) Grading Plan required for conveyance is to be designed with the overall subdivision drainage taking advantage of nearby storm sewers. This includes draining the park surface as well as using subsurface appurtenances, where required. Parks shall not utilize on-site stormwater controls to deal with park generated stormwater. All park stormwater is to be sent to the subdivision minor system. The Owner is also to provide certification that major system park flows will be accommodated within the subdivision as well.

All drainage is to be designed to encumber the site as little as possible recognizing that park amenities and outdoor recreation facilities require excavation.

Letters of park and open space certification, as outlined in Section 5.19 (Standard Certification Letters), shall be provided to the Town prior to the acceptance of park and open space Base Condition.

Park and open space blocks, woodlot blocks, woodlot buffer blocks, as well as utility lands (such as Union Gas lands) are not to be used as areas to direct stormwater from adjacent developments.

Ditch inlet catch basins are not acceptable storm structures for use within park and open space blocks. Ditch inlet catch basins may be included as an 'interim' drainage structure, however, they must be improved to the designed 'ultimate' condition per the Park/Open Space Concept Plan by the Owner prior to acceptance by the Town.

5.4.4 Servicing

5.4.4.1 Water

Neighbourhood Parks require a minimum 50 mm Ø service. District and Community Parks require a 150 mm Ø service complete with backflow device, shut-off valve, or curb stop, as per OPSD-1104.02, located at the property line. Village Square water service requirements will be at the discretion of the Town. Larger parks, including but not limited to District and Community Parks, may require more than one water service.

Water services facilitate the future addition of an irrigation system, drinking fountain, water play feature, or service building. Water service pipe sizes shall be confirmed with Town staff prior to approval of servicing plans. Water meter chambers shall be provided in order to accommodate water service equipment. The location of chambers shall be confirmed by Town staff, based on the approval of the Park/Open Space Concept Plan and park facility layout.

Quick couplers are required to service specific areas. Quantities and locations will be

determined on a case-by-case basis. Booster pumps and/or oversized meter chambers may be required and will be assessed on a case-by-case basis.

5.4.4.2 Sanitary

Sanitary connections will be required for District Parks and Community Parks. Sanitary connections for Neighbourhood Parks and Village Squares, shall be at the discretion of the Town. The Owner is required to ensure that adequate sanitary capacity and allocation exists for the Town's park facility programme. Larger parks, including but not limited to District and Community Parks, may require more than one sanitary service.

5.4.4.3 Electrical

For each Village Square, Neighbourhood Park, District Park, Community Park, and Linear Open Space System, a minimum electrical service is required for pathway lighting and future connections within the park. A single-phase service drop shall be installed 1.0 m inside the park or publically accessible land's property line. The service tail shall be a minimum of 5.0 m in length, staked and tied inside the property line unless otherwise direct by Town staff.

In addition to, or in lieu of, the above noted requirement, some Neighbourhood, District, and Community Parks will require a three-phase primary voltage power supply 1.0 m inside the park property line complete with a pad mount transformer to serve facility needs. Other options will be explored on a case-by-case basis if electrical requirements are other than anticipated.

Lighting priority is given to multi-use pathways that provide a link between residential areas and schools or other pedestrian/cyclist destinations. Lighting of pathways/trails will only occur when the surrounding neighbourhood is adequately populated. For example, trails through woodlots or trails that lead to an unpopulated area will not be lit. Lit trails will require single-phase service drop(s) 1.0 m inside the property line. The service tail is to be 5.0 m in length inside the property line unless otherwise directed by Town staff.

Refer to TMSDs 11-04.01, 11-04.02, and 12-03.01 for Parks and Open Space Lighting.

5.4.5 Site Works

5.4.5.1 Tree Protection

All mature trees and woodlot edges, identified as to be retained, shall be protected per Town standards. Refer to Section 2.1.7 (Fencing) and TMSD 10-01.02.

5.4.5.2 Rough and Fine Grading

Rough and fine grading will be undertaken in accordance with the Park/Open Space Concept Plan and the Interim (Base Condition) Grading Plan prepared by the Owner and approved by the Town. Cash out amounts may be negotiated. Refer to Section 2.7.2 (Base Condition Cash Outs for Park/Open Space Blocks) for further information regarding cash outs.

The placement of a minimum 150 mm of approved topsoil over the entire park block is a requirement of Base Condition. It is the Owner's responsibility to ensure compliance with Section 5.17.5 (Planting Specifications). Where this obligation is not fulfilled, the Town reserves the right to draw on subdivision securities to remediate/amend the topsoil and ensure it is suitable for park purposes.

5.4.5.3 Seeding and Sodding

All areas are to be vegetated. Areas to be seeded, terraseeded, and/or sodded shall be indicated on the landscape plans. The minimum Base Condition vegetation for Village Squares shall be sod. For other parks, areas designated for regular turf maintenance shall be seed. Refer to Sections 5.17.5 (Planting Specifications) and 5.17.6 (Sodding). Seed mix shall be to the satisfaction of the Town and, where applicable, to the satisfaction of the conservation authority.

5.4.5.4 Survey Monuments

Installation of Iron Bars (IBs) and Standard Iron Bars (SIBs) is required at all corners of the conveyed park/open space blocks.

5.4.6 Fencing

Protective fencing at the perimeters of all park and open space blocks is required. Timing of installation shall be at the discretion of the Town and may be in conjunction with Town approvals and/or permits. (Refer to TMSD 10-01.01.)

5.4.7 Signage

The Owner is responsible for supplying and installing interpretive and regulatory signage for parks and open space blocks.

The location of all signs within the subdivision is to be included in the Traffic Control Plan and the Active Transportation Plan. Regulatory by-law signage is required at all park and open space frontages and at all entrances.

A Block Allocation sign (TMSD 16-02.02) is required for all blocks being conveyed to the Town. Installation timing will be at the Town's discretion, with consideration for public access, safety, and construction schedule.

Refer to TMSDs 16-07.02 and 16-09.01.

5.4.8 Completion

Base Condition works shall be completed as per the terms of the relevant Agreement with the Town. The Owner shall provide a complete submission of all required documents, certification letters, and As-Constructed Drawings for Town review and site inspection. Refer to Sections 2.2.17 (As-Constructed Drawings) and 2.8.10 (Security Reductions).

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5.5 Site Preparation

The Owner may be required to provide securities prior to the commencement of any site disturbance in accordance with a Site Alteration Permit, Pre-Servicing Agreement, Subdivision Agreement, or Site Plan Approval.

5.5.1 Site Examinations

5.5.1.1 General

Prior to commencement of on-site work, verify existing subgrade and site conditions including vegetation and report in writing immediately to the Landscape Architect, all discrepancies and conditions which are at variance with drawings and specifications.

Failure to do so will imply acceptance by the Contractor of surfaces and site conditions and no claim made thereafter for damages or extras resulting from such discrepancies will be accepted.

Verify on-site all underground services, such as water lines, sewers, electrical cables, telephone, gas, and other utility lines and have such services located on-site by the appropriate authorities.

Be prepared to meet and blend smoothly with existing grades at the project boundaries where required.

5.5.1.2 Archaeological

The Owner shall carry out a heritage resource assessment of the subject property prior to the issuance of a Site Alteration Permit and if recommended, mitigate/salvage/excavate any significant heritage resources to the satisfaction of the Ontario Ministry of Tourism, Culture and Sport. No grading or other soil disturbance shall take place on the subject property prior to the letter of release from the Regulatory Operations Group of the Ministry of Tourism, Culture and Sport.

5.5.1.3 Inspection

Upon completion of rough grading, adjustment and preparation of sub-grades, the work will be inspected by the Town. Obtain Town approval before proceeding with further work, giving timely notice.

5.5.1.4 Compaction

Compact sub-grade under all paving, and anywhere else specified, uniformly and adequately to a minimum of 98% SPDD.

Sub-grade under landscaped areas (planting and grass) shall meet 95% SPDD.

5.5.1.5 Protection

Protect existing vegetation as directed on-site by Landscape Architect prior to commencing any site works. (Refer to TMSD 10-01.02.) Protection should be in accordance with any and all permits and/or approvals, as required.

Be responsible for all damage and subsequent repair to underground utilities and structures resulting from contractor's operations.

Erect barriers, fencing, and/or signs where required and requested and be responsible for maintenance and removal of such works upon completion of work.

5.5.1.6 Clearing and Grubbing

Clear site of all rubbish, rocks, boulders, tree stumps, and other useless materials and debris, remove from site and dispose of unless instructed otherwise.

Cut all dead trees and remove stumps and roots to a minimum depth of 600 mm below proposed finished grade.

5.5.1.7 Topsoil Stripping and Stockpiling

All areas designed for paving or the construction of structures, shall be stripped of all topsoil and organic matter to its full depth taking care not to contaminate it with any sub-soil.

All stripped topsoil shall be stockpiled in areas designated by the Town.

Topsoil shall be stockpiled in loose layers, not exceeding 225 mm in depth. The total height of a stockpile is not to exceed 4.5 m, unless otherwise approved by the Town.

Topsoil will be re-used for landscape work, unless specified otherwise.

Topsoil stripping shall commence only after designated areas have been cleared of scrub, weeds, brush stumps, rocks, and other deleterious materials. Such materials shall be removed from the site and disposed of by the contractor.

5.5.1.8 Grading

After stripping of topsoil, complete all necessary rough grading, excavating, and filling, where required, to establish the sub-grade under all areas as shown on drawings.

The level of sub-grade shall be to the depths specified, after compaction of sub-grade and of materials placed thereon.

Remove all soft and unstable areas in sub-grade to approved depth and backfill with clean, approved fill material.

Establish and maintain sub-grade parallel to finished grade and shape to allow adequate surface runoff and prevent ponding, scouring and erosion.

Provide for uniform slopes between points for which finished grades are shown on drawings. Meet and blend with existing grades in a smooth manner.

Establish smoothly rounded grades at top and toe of slopes and banks.

Do not grade when soil is wet or frozen.

For the preparation of sub-grade the Contractor shall:

- Scarify sub-grade on which topsoil is to be placed, to the minimum depths specified.
- Scarify sub-grade under areas which are to be raised by placing fill to minimum depth of 75 mm to provide a good bond and prevent slipping of fill.

5.5.1.9 Filling

Fill material shall be clean (free of topsoil, organic matter, and debris) and shall be approved by the Town before placing. On-site excavated material may be used for filling when approved by the Town. Testing of proposed fill materials may be required.

Where required, supply and spread approved fill materials to raise existing grades to the specified sub-grade level, as shown on the drawings.

Fill shall be placed in loose layers, not exceeding 150 mm in depth, and compact each layer to a minimum dry density of 98% of the maximum SPDD before placing subsequent layers.

The surface shall be shaped at all times to ensure adequate surface runoff and prevent ponding and scouring.

5.5.1.10 Excavation

Before proceeding with excavating work for paving and footings, the areas shall be staked out with approval obtained from the Landscape Architect.

Excavate where required to the minimum specified depths to establish the sub-grade under all paving where shown on drawings.

Prepare and compact final sub-grades as shown on drawings.

The excavations for footings shall be carried to undisturbed soil, to depths as shown on drawings.

All excavations shall be sufficiently shored and braced to prevent caving in and support existing structures, roads, services, etc.

Warning signs and protection barriers shall be erected in accordance with local regulations.

The Contractor is responsible for all damage and subsequent repair to underground utilities and structures resulting from their operations.

All excavations shall be protected from freezing and water. Provide and operate as many pumps as are necessary to keep excavations free of water at all times.

All excavated material shall be removed and disposed of as directed, unless approved by the Landscape Architect, for filling or backfilling.

5.5.1.11 Backfilling

This shall include the backfilling around new structures with granular materials and/or other approved fill.

Remove all debris, rubbish, shoring, etc., from excavation before backfilling.

Backfill material shall be clean, free of debris, organic matter, and other deleterious material, and shall not be placed over frozen or wet soil.

Backfill material shall be placed in 150 mm lifts and each layer consolidated to 98% SPDD.

5.5.2 Silt Protection

5.5.2.1 General

The Contractor is fully responsible to ensure that all erosion and sedimentation resulting from the proposed works, dewatering operations, etc. is controlled and contained within the work site to the satisfaction of the Town and/or Conservation Authority.

Any clean-up or damage costs resulting from the Contractor's failure to control erosion or siltation shall be completely at their expense.

At all times, the Contractor shall prevent entry of sediment to watercourses. Controls shall include, but not be limited to, the following:

- Runoff from construction materials and stockpiles shall be contained and discharged so as to prevent entry of sediment to watercourses.

- Erosion and sedimentation control measures shall be placed in watercourses as directed by the Town and/or Conservation Authority.

- Dedicated stockpile area(s) shall be prepared prior to dredging. Stockpile area(s) to be adequately sized to account for spreading of wet sediments and be determined in consultation with the Town.

- Silt fences shall be installed along the perimeter of the stockpile site. Silt fences shall be installed across truck access routes to the stockpile at the end of the work day.

- A 20.0 m stand-by supply of prefabricated silt fence barrier, in addition to any other silt fence barrier, shall be maintained at the site prior to commencement of operations and throughout the duration of the site works.

- Conventional and in-water sediment control fence to be installed as per drawings approved by the Town and/or Conservation Authority. Sediment and erosion control measures to remain in place until authorized for removal by the Town.

5.5.2.2 Silt Fencing

Silt fence is to consist of snow fencing lined with geo-textile fabric and continuous row of straw bales to prevent any soil from eroding from re-graded or disturbed areas during construction or OPSD.219.110 or at the discretion of the authority having jurisdiction.

Silt fence is to be installed by the Contractor and inspected and approved by the Landscape Architect prior to the start of any construction. After approval, the silt fence

shall be maintained intact by the Contractor until the grass cover is well established and approved by the Landscape Architect.

Contractor is responsible to remove the silt fence and restore and re-seed disturbed areas as required upon final acceptance.

5.5.3 Tree and Shrub Protection

5.5.3.1 General

The Contractor shall be required to protect the root systems and habitat of existing trees from damage due to excavation, compaction, or contamination resulting from construction. For the installation of conduits, the Contractor may be required to bore/tunnel under the tree's root system using methods and equipment acceptable to the Town.

Protection measures are to be installed and maintained in accordance with approved reports and permits.

The Contractor shall supply equipment that maintains existing tree canopy when working under overhanging limbs.

No trees shall be pruned without prior approval from the Town.

5.5.3.2 Scheduling of Site Work

It is the responsibility of the Contractor to become directly acquainted with the site, to carefully examine the location of the proposed work, and to notify the Town of any discrepancies in the site conditions. No allowance will be made should the contractor fail to do so.

The Contractor is responsible for damage caused to the surrounding facilities. Facilities damaged by the Contractor shall be repaired at their expense, and to the approval of the Town.

Prior to commencing any excavation work, the Contractor shall establish, as near as possible, the location and state of use of all utilities or services, and is responsible for damage or relocation incurred during the execution of the project.

The Contractor shall confine their operations to the Owner's property as shown on drawings and as directed by the Landscape Architect.

The setting out of work shall rest solely with the Contractor who will be responsible for

the same. It is the Contractor's responsibility to verify all grades, lines, levels, and dimensions as indicated on the drawings and report any errors or discrepancies to the Landscape Architect. The Contractor shall have such staking approved by the Landscape Architect before the commencement of work.

5.5.3.3 Materials

Protective barrier shall consist of 1.2 m high, rigid page wire fencing, with steel T-bars at a maximum spacing of 2.5 m. (Refer to TMSD 10-01.02.)

5.5.3.4 Installation

Prior to the start of any site work, the Contractor shall supply and install tree protection barriers around each tree and shrub grouping designated to be protected, or as directed by the Town.

The tree protection barrier, as a minimum, shall be located at the outer limit of the drip line of the tree. The drip line is defined as the outside edge of the tree canopy. Protective barriers for shrub massings are to be located a minimum of 1.0 m from the outside edge of the plants.

No fill, machinery, or materials are to be placed within a protective barrier.

No re-grading, including filling or excavation, shall take place within a protected area.

All underbrush that is to be removed from within a protective barrier must be cleared by hand. The method of removal of brush from a protected area shall be approved by the Town.

The Contractor is responsible for the removal of tree and shrub protection upon final acceptance.

5.5.3.5 Quality of Work

The Contractor is required to replace, with material of equal value and at no extra cost to the contract, all plant material damaged as a result of improper installation or maintenance of protective barriers.

5.5.3.6 Guarantee

The Contractor is responsible to ensure that protective barriers are installed prior to the start of construction and is maintained intact until final acceptance of the project.

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5.6 Topsoiling and Site Grading

5.6.1 Criteria

All areas designated for parkland are to have a minimum of 150 mm of topsoil.

Stockpiling and/or storage of any materials on any existing or future Town property is not permitted.

Topsoiling and grading works on these lands are to be performed in accordance with Town approvals and permits. Slopes shall not exceed 3:1.

Topsoil, nutrient, and chemical testing for horticultural purposes is required to the Town's satisfaction at the expense of the Owner. The Owner is responsible to amend the topsoil in accordance with these topsoil tests and re-test to ensure Town satisfaction. Topsoil used on-site must meet or exceed Town criteria.

Refer to Sections 5.17.5.2 (Topsoil Testing) and 5.17.5.7 (Planting Materials).

Match with surrounding grades.

Spreading of topsoil, rough grading, fine grading, and seed bed preparation (including removal of all stones and debris) are to be completed and inspected by the Town prior to seeding/sodding.

Topsoil should be stabilized within the construction year's growing season. Refer to Section 5.17.7 (Seeding).

5.6.2 Testing

Test topsoil for Nitrogen (N), Phosphorous (P), Potassium (K), Magnesium (Mg) and, minor element values, atrazine, soluble salt content, organic matter, pH value, and agricultural herbicide residue.

Perform a pH test to determine required lime treatment to bring the pH value of the soil to within a range of 5.5 to 7.5. Test topsoil after it has been placed.

Submit a copy of the soil analysis and recommendations to the Town prior to commencing work.

Inspection and testing of topsoil shall be carried out by a testing laboratory approved by the Town. Testing costs, including any re-testing, associated with conveyance of parkland are the Owner's responsibility.

5.6.3 Materials

All topsoil shall be obtained from stockpiles, or supplied by the Contractor, and shall be a fertile, friable, natural loam containing a minimum of 4.0% organic matter for clay loams and minimum of 2.0% organic matter for sandy loams with an pH range of 5.5 to 7.5 and shall be capable of sustaining vigorous plant growth.

Topsoil shall be free of any admixture of sub-soil, clay lumps, stones, roots and other extraneous matter and shall be free of weeds and weed seeds.

5.6.4 Topsoil Spreading and Fine Grading

Obtain approval by the Town of prepared subgrade prior to spreading topsoil.

Topsoil shall be spread to a minimum compacted depth of 150 mm for all areas to be seeded and sodded.

Compaction shall be 85% SPDD.

Topsoil shall be spread on prepared sub-grade of the work site and fine graded to produce a smooth even surface free from debris, sod, stones, and roots.

Meet and match all existing areas, curbs, manhole lids, and catchbasin grates in a smooth uniform line.

5.7 Electrical Servicing and Lighting

5.7.1 Criteria

5.7.1.1 General

A Professional Electrical Engineer with recent experience in municipal park and sports lighting design must be retained to prepare the electrical drawings and specifications.

The completed drawings and specifications will be submitted to the Town for review, prior to the issue for tender.

The electrical work on the site will be performed by skilled licensed electricians working for electrical contractors holding valid electrical contractor's licences.

Work will conform to the latest rules, regulations and definitions of Canadian Electrical Safety Code and applicable Municipal and Provincial Codes and Regulations and with requirements of other authorities having jurisdiction in the area where work is to be performed. Standards established by drawings and specifications will not be reduced by applicable codes or regulations.

File contract drawings with proper authorities and obtain their approval of installation and permits for same before proceeding with work. Prepare and submit necessary detailed drawings as required by authorities.

Furnish necessary certificates as evidence that work installed conforms to laws and regulations of authorities having jurisdiction.

Upon project completion secure and supply a copy of each of the following to the Town:

- Final Certificate of Inspection from the Electrical Safety Authority
- Owner's Manual
- Detailed As-Constructed Drawing
- Certification of the as-constructed lighting performance criteria

All electrical appurtenances require metering, as per Milton Hydro requirements.

All parks require service entrance disconnect switches.

5.7.1.2 Conduit

Conduit installed below grade and below concrete grade slabs will be rigid heavy-walled PVC, with solvent weld joints and be Ontario Hydro approved for use above grade.

Refer to CSA SPEC C22.2-No. 211.2. Rigid TYPE 2 PVC underground conduit, ENT, EBII, DBII and poly pipe are not acceptable.

Provide a separate code gauge supplementary green stranded TW grounding conductor run in each conduit, terminating a ground block at panel boards.

Fasten every conduit to structural members by means of approved conduit clamps or clips. Wire lashing is not acceptable.

Provide a 150 mm wide yellow plastic “CAUTION” tape located 300 mm above each buried conduit for the full length of the conduit.

5.7.1.3 Wire and Cable

All wire and cable shall be comprised of stranded copper conductors, rated for a minimum of 90 °C, 600 V and be CSA approved for applications.

Wire and cable shall be Type RWU stranded wire cable will not be installed at temperatures below -6 °C.

Wire and cables in feeders, sub-feeders, and branch circuits shall be colour-coded in accordance with Ontario Electrical Safety Code. Each end of feeder terminations (e.g., in switchboard, panel boards, switches, splitters, and the like) Code Phase A-Red, Phase B-Black, Phase C-Blue, and Neutral-White.

All wire and cable shall be designed and indicated on the drawings. The maximum voltage drop between the furthest outlet of any circuit when fully energized and the service panel to which it is connected will not exceed 3%.

Solderless connectors nylon-jacketed “Vibration-Proof” screw-on wire connectors “Ideal-Wing Nuts” rated for 600 V shall be used for joints in branch wiring.

5.7.1.4 Disconnect Switches

Provide fusible and non-fusible switches of one manufacture NEMA Type ‘HC’ with quick-make, quick-break contacts. Provide holders to accept HRC fuses. Switches to include mechanical cover interlocks and line side barriers.

Switches will be CSA “Approved for High Service Factor”.

Switches will be CSA approved for service entrance use where required.

5.7.1.5 Panels

All lighting and power panels will be supplied with surface enclosures and trims. The trims will be supplied with hinged covers with flush lockable latches that conceal the breakers.

Panels will be supplied with fixed bolted connection thermal-magnetic, quick-make, quick-break, 40 °C, calibrated ULC rated 'SWD' switching duty, moulded-case circuit breaker. 'Plug-in' breakers are not acceptable. Multi-pole breakers shall be common trip type. Circuit breakers in 347/600 V panel boards shall be rated 350 V single pole and 600 V for two and three pole.

5.7.1.6 Time Clocks

All time clock will be Intermatic # ET171C or equal single pole single throw, 30 A rated contacts, 120 V clock motor and AA battery for reserve clock power.

5.7.1.7 External Cabinets

Provide EEMAC 3R weatherproof, gasketted control cabinets with the required mounting. Cabinets to include welded locking bars that cover and overlap the opening edge of the doors and suitable for the Town's padlock. The lock location must have a welded lock shield to prevent tampering the lock. The cabinets are to be primed after fabrication and finished with two coats of water-proof grey enamel paint.

Cabinets are to be locked at all times. The Town will provide locks only upon Acceptance of lighting installation.

5.7.1.8 Replacement Components

All products will conform to the general design concept of this specification and will operate with generic consumable components readily available from local electrical distributors.

5.7.2 Sports Facility Lighting

5.7.2.1 Poles and Cross Arms

Poles shall be pre-stressed spun, mould finished concrete, direct buried as per Typical Sports Lighting Pole Base. (Refer to TMSD 12-03.01.)

Each pole will be specified with a cast metal tamper proof hand hole cover and a cast-in-concrete ground conductor to the top of the pole.

The poles will be specified to exceed the structural requirement to support the EPA in 130 km/hr winds with a 1.3 gust factor.

All wire within the pole will be RWU copper only.

The cross arms will be 75 mm x 100 mm (3” x 4”) braced, structural box steel, hot dipped galvanized after fabrication.

Refer to the field layout details for the recommended pole locations.

5.7.2.2 Flood Lights

The sports flood lights will be spun aluminum construction, utilizing a 1000 W metal halide lamp and ballast.

Only floodlights with sharp cut-off optics and beam control will be specified for sports lighting.

The lighting fixture cut-off performance must be verified with a computer generated print out and a location of a similar installation within 100 km of the Town.

There is to be no more than a maximum of 0.1 foot-candle (fc) of maintained horizontal illuminance, 60.0 m from the primary play lines.

Each fixture is to be factory pre-wired with a sufficient length of 600 V cabtire and is to be supplied with a stainless steel safety cable.

The complete installation must be target aimed to confirm the computer print-out and the basic design criteria.

The consultant will verify the lighting levels with individual light meter reading at every point on a 6.0 m grid on the playing surface.

Substantial completion must not be certified until the lighting levels have been verified and accepted on-site by the Town.

5.7.2.3 Lighting Control

The lighting fixture will be controlled with branch circuit contactors, a digital time clock, and momentary contact ON/OFF push buttons.

A separate time clock is required for each sports field.

5.7.2.4 Sports Facility Lighting Criteria

Table 5.1 Sports Facility Lighting Criteria

Type of Facility	Min. Mounting Height	Min. Maint. Horiz.	Max. to Min. Uniformity	Min. No. of Poles
Tennis (2-court)	12.19 m (40 ft)	25 fc	2:1	4
Tennis (3-court)	13.72 m (45 ft)	25 fc	2:1	4
Tennis (4-court)	15.24 m (50 ft)	25 fc	2:1	4
Slow Pitch (infield)	15.24 m (50 ft)	30 fc	2:1	4
Slow Pitch (outfield)	15.24 m (50 ft)	20 fc	2.5:1	4
Baseball (infield)	21.34 m (70 ft)	30 fc	2:1	4
Baseball (outfield)	21.34 m (70 ft)	20 fc	2.5:1	4
Soccer	16.76 m (55 ft)	25 fc	2.5:1	8

5.7.3 Pathway Lighting

5.7.3.1 Poles

Poles shall be direct buried, pre-stressed, coloured concrete with a polished or etched finish.

Poles shall be specified with a cast metal tamper-proof handhole cover and a ground wire cast into the concrete.

The pole colour specified will co-ordinate with the luminaire specified.

Wiring within the pole shall be RWU copper only.

5.7.3.2 Fixtures

Pathway fixtures shall be one piece cast metal construction with a hinged, gasketted, tempered glass lens.

Polycarbonate vandal shields may be required for each luminaire, subject to the Town's discretion.

Fixtures shall have a 70 W clear high pressure sodium lamp and ballast.

The IES TYPE II or TYPE III full cut-off distribution pattern will be achieved with a one piece hydro formed reflector.

The colour of the fixture shall be coordinated with the pole.

The minimum fixture mounting height is 4.58 m (15.0 ft) above finished grade.

The pole spacing is not to exceed 30.0 m on centre. Spacing will be reduced with the shape of the pathway and placement of the plant materials.

The overall pathway will be designed to a 0.5 fc maintained average.

5.7.3.3 Lighting Control

The first fixture in each pathway lighting circuit shall be equipped with an integral button-type photo control to control the complete circuit.

5.8 Water Servicing and Irrigation

5.8.1 Water Servicing

Water meter chambers to be provided, in order to accommodate water service equipment, location of chamber to be confirmed by the Town.

Quick couplers are required to service specific areas. Quantities and locations to be determined on a case-by-case basis. Booster pumps and/or an oversized meter chambers may be required and will be assessed on a case-by-case basis.

5.8.2 Irrigation Standards and Specifications

Refer to the Landscape Ontario Irrigation Commodity Group standard specifications.

All irrigation proposed within the Town should follow the Turf and Landscape Irrigation Best Management Practice (T and L BMP) and follow the practice guideline.

For design, contracting, and management, individuals shall be required to have obtained the certification specific to their field. The certifications include:

- Certified Irrigation Designer (CID)
- Certified Irrigation Contractor (CIC)
- Certified Landscape Irrigation Auditor (CLIA)
- Certified Landscape Irrigation Manager (CLIM)
- Certified Golf Irrigation Auditor (CGIA)

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5.9 Water Play Systems

5.9.1 Design

All water play/spray pads will be bonded with a #6 bare copper ground cable and to bond all metal components within 1.5 m of the water play area, in accordance with The Ontario Electrical Safety Code. The components will include all water spray posts, ground mounted spray heads, and drain grates meeting Town approval, all brackets for the play features and the reinforcing steel in all of the poured concrete slabs and curbs. Provide Electrical Safety Authority Inspection prior to the installation of the pad surface material.

Provide a 15 A, 1-pole, GFI circuit breaker installed in a panel or a separate circuit breaker enclosure to feed the water play control panel. Control the feed to the water play panel with an Intermatic #ET171C SPST digital time clock with battery back-up power supply to maintain the clock time and program during a power outage.

Wire and connect the 24 V AC solenoid valves for the water play control system, located in the sub-grade pre-cast concrete chamber or park building as approved by the Town. Terminate the conduits in a PVC 'D' pull box in the chamber. Do not splice the wires inside the pull box. Wire to the solenoid valves with 2-#14 RWU stranded copper wire with a ground wire inside a 13 mm (1/2") Sealtite Flexible Conduit. Mount a PVC outlet box on the solenoid valve to terminate the Sealtite and to connect the wire leads on the solenoid valves. All wire connections in the concrete chamber are to be made with T and B insulated compression butt splices and provide an overall insulation sleeve with T and B epoxy filled heat shrink tubing.

Wire, connect and test all of the momentary contact push buttons mounted in water play posts. The buttons will be provided and mounted in the posts by the water play equipment supplier. Feed each button with a separate conduit and 2-#12 RWU + a #12 TW ground from the sub-grade chamber. The electrical contractor will supply, install and test the water play control panel. An approved custom control panel manufacturer with CSA approval will manufacture the panel. The panel will be supplied in an EEMAC 12 enclosure with an automotive key lock in the door. The panel will be pre-wired to numbered terminal strips and factory tested to operate the control sequence as provided by the electrical consultant. The following equipment will be included in the panel:

- 120 to 24 V 100 A AC isolation transformer
- 12 V DC power supply
- Main system circuit breaker
- Cover mounted main system control switch
- Omron #H3CR-F repeat cycle solid state programmable electro/magnetic timing

relays (one relay for each solenoid)
- One time delay relay for each push button to provide open circuit control
- Final ESA approval certificate

All power wiring, control wiring and system bonding will be provided by a licensed electrical contractor.

All conduits must run outside the play areas. Route conduits into the play areas to the push button posts in a common trench in the most direct route possible. Avoid all water piping and system grounding.

The Contractor shall provide a copy of the Maintenance Manual specific to the equipment and appurtenances installed. The Contractor is to provide one demonstration/commissioning and subsequent closing of the system following one full season of operation and one opening the following spring. Time is to be scheduled to include Project Manager and Representative from Operations Division.

Refer to TMSD 17-10.02 for the Typical Water Play Control Schematic.

5.9.2 Storm Sewers

For connections to the municipal storm sewer system, refer to Section 4.5.4.10 (Main Line Connections).

5.10 Play Equipment Areas

All play equipment areas shall meet the requirements of the Town's Play Equipment Program and be awarded as an allowance within the general park construction contract, through the Town's Play Equipment Request for Proposal (RFP) purchasing process.

In addition to compliance with AODA-DOPSS, all play areas must meet or exceed the following minimum mandatory criteria, and be certified, as required:

- Play equipment design, manufacturing and installation must comply with Canadian Standards Association CAN/CSA Z614-14 (Annex H), or latest revision.

- Play equipment components shall individually be IPEMA Certified.

Seating, trash receptacles, shade trees, and other park amenities are to be designed as essential amenities of the play area to the satisfaction of the Town.

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5.11 Pedestrian and Vehicular Entrances

Refer to TMSDs 16-07.02, 16-09.01, and 16-10.01 through 16-10.04.

Park and open space entrances shall be located to provide ease of access from abutting streets, open space, and other Town-owned lands. Entrance areas may be defined with seating, trash receptacles, park signage, and planting. A hierarchy of major and minor entrances may apply to some sites. Where possible, entrances will be located to align with street corners, crosswalks, and active transportation routes.

Frontages are to be free of encumbrances such as servicing appurtenances, street poles, and other ROW appurtenances. Park servicing must be designed outside of the entrance area to create a visually attractive and unencumbered node.

Park entrances may be required to provide access for maintenance vehicles. Winter maintenance of entrances and trails/pathways will be determined by the Town.

Signage will be consolidated where possible to reduce visual clutter.

Entrances are to be located on all submission drawings. For sites where land is being conveyed undeveloped, acknowledgement by labelling is sufficient.

P-Gates may be required. (Refer to TMSDs 09-02.01 and 09-02.02.)

For development applications, all potential entrances are to be depicted on both the Park/Open Space Concept Plan and the Interim (Base Condition) Grading Plan. The boulevard areas at these locations shall be designed and constructed to be free and clear of any and all encumbrances.

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5.12 Parking Areas

5.12.1 Criteria

Any on-street parking is to be designed in accordance with current Town policies and by-laws.

Parking is required within Neighbourhood, District, and Community Parks.

Parking areas are to be paved and located conveniently adjacent to the active sports facilities, and may have continuous concrete curb or precast concrete curbs as approved by the Town.

Parking areas shall be accessed by a driveway adequate for two-way traffic and include space for snow storage.

Each parking space shall be delineated by painted line markings.

Parking areas may be illuminated.

Parking areas may be designed in conjunction with adjacent schools.

5.12.2 Design

The Town of Milton Comprehensive Zoning By-Law (as amended) outlines the minimum required parking and loading provisions.

5.12.2.1 Layout and Drainage

Where possible, drainage for the parking areas will be by overland flow using a vegetated swale as part of the storm water management plan and/or catchbasin system. The design shall be determined on a case-by-case basis.

Erosion protection is required at the entrance to the swale at the edge of the parking lot.

5.12.2.2 Asphalt Surfaces

Asphalt specifications shall be as per TMSD 09-01.03 or as otherwise recommended in the Geotechnical Report, whichever is greater.

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5.13 Accessibility

Park and open space designs shall be in accordance with the Accessibility for Ontario for Disabilities Act Design of Public Spaces Standards (AODA – DOPSS as amended), at a minimum.

5.13.1 Trails and Pathways

Each park will contain a pedestrian system of pathways, trails, bridges, and ramps to provide continuous direct access from entry points at the edges of the park or parking lot to the park facilities.

5.13.2 Playground Equipment

In addition to the minimum requirement for compliance with AODA-DOPSS, play equipment proposals must meet or exceed the following minimum mandatory criteria, and be certified, as required:

- Play equipment design, manufacturing and installation must comply with Canadian Standards Association CAN/CSA Z614-14 (Annex H), or latest revision.
- Play equipment components shall individually be IPEMA Certified.

See Play Areas in Section 5.10 (Play Equipment Areas).

5.13.3 Limits to Public Use

The Town may enter into partnerships with specific community-based organizations (e.g., soccer teams or tennis clubs) to provide or maintain certain recreation and park facilities. From time to time these same facilities may be closed to general public use according to these agreements. These closures may be publicized via Town approved communications messaging media.

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5.14 Pathways and Trails

Each park and open space corridor will contain pathways/trails which link natural features and recreational facilities with surrounding residential areas. The pathway/trail system will consist of a hierarchy of pathways/trails with different widths and materials.

5.14.1 General

Pathway and trail entrances are to be located at the intersections of the abutting streets to reduce unmarked mid-block crossings.

Pathway and trail entrances may require concrete thresholds to curb depressions complete with tactile plates. Offset P-gates will be required where trail access points abut street frontages. Locations are to be determined on a case-by-case basis.

Benches and trash receptacles are to be located at regular intervals along the pathway/trail with sufficient setbacks so as to not reduce the width. Shade trees are to be planted at each seating area.

Where pathways/trails cross over watercourses, a culvert or pedestrian bridge shall be provided. Detailed engineering plans must be submitted for approval by the Town.

5.14.2 Woodlot Mulch Trails

5.14.2.1 Initial Layout

Trails are to be incorporated into woodlots to create connections between residential neighbourhoods, open spaces, parks, recreation facilities, and Town destinations. The layout used in each trail will be determined on a case-by-case basis and approved by the Town. The goal of the trail design and layout is to safely accommodate all age groups and accessibility requirements as best as possible while minimizing disturbance to woodlot ecosystem. The trail layout should not interfere with the root zone of trees with a DBH greater than 10 cm.

5.14.2.2 Design

Trail widths are to be typically 3.0 m wide. A 2.5 m vertical clearance for overhead branches shall be maintained. Typical mulch depth is 15 cm with a high point in the centre of the trail.

Refer to TMSD 09-01.01.

5.14.3 Limestone Screenings Trails

5.14.3.1 Design

Limestone screenings (granular) may be used in areas deemed suitable, such as stormwater management pond blocks, channel blocks, woodlots, and naturalized and/or low maintenance open space. Limestone screenings trails are typically 3.0 m wide.

5.14.3.2 Material

19 mm (3/4”) crushed rock stone (crusher run) is to conform to MTO specification, Form 1010, subject to site conditions and Town approval.

In low or wet areas, filter fabric may be placed for soil separation.

Refer to TMSD 09-01.02.

5.14.4 Asphalt Pathways and Trails

Asphalt shall be used for park pathways, multi-use paths within the boulevard, and within open space trails, as determined by the Town.

Refer to TMSD 09-01.03 and OPSS.MUNI 310.

5.14.5 Concrete Paving

Refer to TMSD 09-01.05 and OPSD 310.010.

5.14.6 Unit Pavers

5.14.6.1 Design

Where a desired design effect is to be achieved, unit paving will be considered. Subgrade soil type, potential use, and durability requirements will reflect the layout, pattern, type of paver, and the sub-base.

Drawings are to be provided for all special features and paving patterns for approval by the Town.

5.14.6.2 Material

Approved concrete unit pavers, jointing sand (fine graded with 100% passing the 1.18 sieve size), and edge restraints where applicable. All materials shall be installed per manufacturer specifications.

5.14.7 Culverts

Culverts may be installed beneath any type of pathway/trail as required to allow for the uninterrupted flow of water.

Culverts will typically be, 300 mm Ø galvanized CSP, have a 68 mm x 13 mm corrugation profile and a 1.6 mm thickness, or as specified by consultant. (Refer to TMSD 09-04.01.)

5.14.7.1 Design

As per OPSS 421, Construction Specification for Pipe Culvert Installation.

Culvert openings shall be re-graded to smooth out ruts and water blockages. Smoothing of grade is to eliminate the need for hand tools for grassed area maintenance.

No abrupt grades or culvert edges shall protrude so as to endanger any person or maintenance equipment.

For culverts that do not require improvement, the Contractor is to carefully work up to and around these culverts. Clean out culverts as required to ensure proper functioning.

5.14.7.2 Backfilling

All fill material shall be clean and free of deleterious materials, rocks larger than 100 mm, and debris.

Stockpile fill materials in areas designated by the Town. Do not stockpile excavated material to interfere with site operation or drainage. Protect fill materials from contamination.

5.14.8 Bridges

Park and Open Space bridges will be designed on a case-by-case basis, as required. Bridges are intended for use by pedestrians and parks maintenance equipment, including service vehicles such as pick-up trucks. All bridges are to be designed by a

qualified Professional Engineer installed in accordance with the Ontario Highway Bridge Design Code, as amended. Shop drawings are to be submitted to the Town for approval prior to bridge construction.

A permit may be required by Conservation Halton.

Bridges consist of three integral construction units:

- Verticals and chords that comprise the rails and sides
- Beams, stringers, and decking that make up the walking platform
- Concrete sleepers set into the banks on which the bridge sits

5.14.8.1 Materials

All parts of the bridge excluding decking, support sleepers, and hardware, is to be self-weathering structural steel, conforming to CSA G40.21-M35OA.

All exposed tube ends are to be capped.

The platform's wood decking is to be pressure treated wood, or as approved by the Town.

The concrete sleepers will be 32 MPa concrete reinforced with 16 mm rebar and set with four 19 mm anchor bolts for fastening purposes, or as approved by the Town.

5.14.8.2 Handrails

The handrail must be compliant with AODA standards.

Verticals shall be spaced no more than 1218 mm (48”) apart. Diagonals will further stabilize the handrail between verticals. Safety rails shall be provided with vertical members.

5.14.8.3 Platform Supports

Floor beams shall be spaced no more than 1218 mm (48”) apart, complete with wind diagonals.

Stringers running the length of the bridge shall be installed 610 mm (24”) inwards from the bottom railing chord, or 305 mm (12”) outwards from the bridge centre line. They shall sit atop the floor beams and support the wood decking in conjunction with the deck support angle attached to the bottom railing chord.

5.14.8.4 Connections and Hardware

Welding of structural steel shall meet the requirements of CSA W59-M1989 and be executed by a fabricator approved as per CSA W47.1-1992.

Decking should be installed using stainless steel bolts, nuts, and washers.

Anchor bolts, nuts, and washers at concrete sleepers shall be hot dipped galvanized.

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5.15 Signage

The Owner is responsible for supplying and installing temporary and/or permanent interpretive and regulatory signage that is resistant to weathering and vandalism and related to the public use of parks and open space. The timing of the installation will be at the Town's discretion.

All signage shall be designed in accordance with the Town of Milton Signage Program and submitted to the Town for approval. Signage must comply with AODA minimum standards. Permits may be required for certain types of signs.

5.15.1 Construction Signs

Each park will have a minimum of one Town sign identifying the name of the park under construction and all required project information including Town logo. All sign design layouts and locations are subject to Town approval. Large parks may require additional identification signs at secondary entrances. (Refer to TMSD 16-02.01.)

'Park Closed' signs will be required on a case-by-case basis at the discretion of the Town.

5.15.2 Identification Signs

Each park will have a minimum of one Town sign identifying the park name and municipal address with the Town logo. All sign design layouts and locations are subject to Town approval. Large parks may require additional identification signs at secondary entrances. (Refer to TMSD 16-10.01.)

Each facility within a park will have a minimum of one Town sign identifying the facility including hours of operation. Additional signage may be required. (Refer to TMSDs 16-10.02.)

5.15.3 Regulatory Signs

Each park and open space area will have regulatory by-law signage to identify any limitations to use. The sign types may include wording such as, 'No Motorized Vehicles', 'Park Hours', or 'Stoop and Scoop' with applicable by-law numbers listed as necessary. Each park will have a minimum of one regulatory sign for each entrance. All

sign design layouts and locations are subject to Town approval. Additional signage may be required at the discretion of the Town.

The Town requires the installation of 'No Dumping' regulatory signage along park properties abutting ROWs, easements, woodlots, natural areas, and/or utility corridors. Signs and locations will be determined on a case-by-case basis.

Refer to TMSD 16-11.01.

5.15.4 Interpretive Signs

Interpretative signs may be required at areas of interest such as wetlands, naturalization areas, woodlots, stormwater facilities, and heritage features. The purpose of the signage is to identify and describe for the public significant features, events, or facts to enhance recreational experience of the park user. Each interpretive sign is to include the Town of Milton logo. (Refer to TMSDs 16-07.02, 16-09.01, and 16-11.02.)

The following are recommended installations:

- Interpretive sign outlining the function and proper activities in association with stormwater management facilities and/or woodlots.
- Interpretive sign describing the origin of a park name.
- Interpretive signs outlining historical or natural points of interests as appropriate in all park types.

5.15.5 Wayfinding Signage

Wayfinding signage and pavement markings may be required in for the pathway/trail system.

The installation schedule will be determined by the Town.

5.16 Site Furnishings

The selection of site furnishings (e.g., picnic tables), hardware (e.g., door handles), and fixtures will be based on ease of use for a wide range of capabilities and age groups.

All products shall be as approved by the Town.

All installation methods and hardware shall be resistant to vandalism.

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5.17 Planting

5.17.1 General

The Town of Milton encourages the use of native species within parks and open spaces. Where a planting area is proposed adjacent to woodlots, watercourses, or other natural areas, only non-invasive species indigenous to Halton Region will be approved. Refer to Section 5.17.11 (Native Plant Species) for recommended species for the Halton Region.

The Plant Hardiness Zone for Urban Milton is '5a'.

Non-naturalized planting areas are to be designed in continuous mulched beds where possible to reduce maintenance. (Refer to TMSD 18-01.03.)

Bare root plant material will be considered on case-by-case basis.

A variety of tree species is required. Clustering of similar species is discouraged and should be limited to clusters with 5 to 9 trees per grouping.

5.17.2 Park Trees

Refer to Section 5.17.10 (Standard General Planting Notes) and TMSDs 18-01.01, 18-01.02, 18-02.01.

The Owner is required to supply and install trees within parkland, naturalized, and open space areas as required to provide user comfort, screening/buffering, accenting of entrances, wildlife habitat etc. as determined by the Town.

Refer to Table 5.2 for a list of suitable parkland tree species. Moisture regime, sunlight availability, and salt tolerance (where applicable) must also be considered as factors when selecting species.

Trees are to be placed so as not to interfere with underground utilities, intersection sight lines and aboveground utilities such as overhead wires, light standards, utility boxes, fire hydrants, etc.

Where possible, medium to large shade trees are to be selected.

Deciduous trees should have a clear trunk with a high branching height of 1.8 m minimum.

Trees located at entrances, around play areas, buffering sports facilities, and parking

areas shall be minimum 60 mm calliper. All tree roots to be wire basket or balled and burlapped for these locations.

In urban areas fronting roads, non-native or ornamental species that exhibit tolerance to salt spray may be used. Refer to Section 5.17.3.1 (Salt Tolerance) for species that are salt tolerant.

Park trees proposed near watercourses and other natural areas must be non-invasive, ecologically appropriate, and/or native to Halton Region.

5.17.2.1 Size and Spacing

The following size classification is based on average mature height, and identifies size as well as spacing requirements:

Table 5.2 Recommended Size and Spacing of Park Trees

Size at Maturity	Spacing for Specimen or Accent Trees
Small: up to 8.0 m (26 ft)	Min. 6.0 m (20 ft) – Max. 8.0 m (26 ft)
Medium: 8.0 m (26 ft) to 18.0 m (60 ft)	Min. 8.0 m (26 ft) – Max. 8.0 m (33 ft)
Large: 18.0 m (60 ft) and larger	Min. 9.0 m (33 ft) – Max. 8.0 m (40 ft)

Notes for Tables 5.2:

i. Minimum spacing may be reduced at the Town's discretion.

5.17.2.2 Species

Table 5.3 provides a list of recommended deciduous parkland tree species.

Table 5.3 Recommended Park Tree Species

Botanical Name	Common Name	Native[(i)]	Size Class at Maturity	Growth Rate	Canopy Size at 20 Years
Acer campestre	Hedge Maple	No	Small	Slow	7.50 m
Acer x freemanii 'Celzam'	Celebration Maple	No	Medium	Medium Fast	5.50 m
Acer x freemanii 'Jeffersred'	Autumn Blaze Maple	No	Medium	Medium	9.00 m
Acer saccharinum	Silver Maple	No	Large	Fast	10.00 m

Acer saccharum	Sugar Maple	Yes	Large	Slow Medium	10.50 m
Amelanchier arborea	Downy Serviceberry	Yes	Small	Slow Medium	4.00 m
Amelanchier laevis	Serviceberry	Yes	Small	Slow Medium	3.75 m
Carya cordiformis	Bitternut Hickory	Yes	Large	Slow Medium	12.00 m
Carya ovate	Shagbark Hickory	Yes	Large	Slow	10.00 m
Catalpa speciose	Western Catalpa	No	Large	Fast	12.00 m
Celtis occidentalis	Hackberry	No	Medium	Medium Fast	11.00 m
Cercidiphyllum japonicum	Katsura Tree	No	Medium	Slow	4.30 m
Corylus colurna	Turkish Hazel	No	Medium	Medium	5.50 m
Ginkgo biloba	Ginkgo[ii]	No	Large	Slow	8.00 m
Gleditsia triacanthos var. inermis	Thornless Honeylocust	No	Large	Fast	10.50 m
Gymnocladus dioicus	Kentucky Coffeetree	No	Large	Slow Medium	10.00 m
Juglans nigra	Black Walnut	Yes	Large	Medium Fast	14.00 m
Ostrya virginiana	Ironwood	Yes	Small	Slow	5.40 m
Pyrus calleryana var.	Ornamental Pear	No	Medium	Medium	4.50 m
Quercus species	Oak	Yes	Large	Medium Fast	Varies
Tilia Americana	Basswood	Yes	Large	Medium	10.00 m
Tilia cordata var.	Littleleaf Linden	No	Medium	Medium	6.40 m
Ulmus x 'Pioneer'	Pioneer Elm	No	Large	Medium	9.50 m

Notes for Table 5.3:

i. ‘Native’ refers to species that naturally occur within Halton Region.
ii. Male variety only.

The above table is a quick reference guide only. The Town encourages the use of other

hardy native species and cultivars that may help add to the diversity of the urban forest.

The use of Acer *platanoides* and *Acer negundo, Fraxinus spp*. and their respective cultivars will not be approved.

5.17.3 Street Trees

Tables 5.4 and 5.5 provide lists of tree species that are suitable for street trees.

Table 5.4 Recommended Street Tree Species

Botanical Name	Common Name	Native[(i)]	Size Class at Maturity	General Comments
Acer campestre	Hedge maple	No	Small	Standard and compact form, best on alkaline soils
Acer x freemanii 'Celzam'	Celebration maple	No	Medium	
Acer x freemanii 'Jeffersred'	Autumn Blaze maple	No	Medium	
Acer nigrum 'Green column'	Black maple	Yes	Large	
Acer rubrum 'October Glory'	October Glory maple	No	Medium	
Acer saccharum	Sugar maple	Yes	Large	
Amelanchier arborea	Downy serviceberry	Yes	Small	Standard form
Amelanchier laevis	Serviceberry	Yes	Small	Standard form
Celtis occidentalis	Hackberry	Yes	Large	
Corylus colurna	Turkish hazel	No	Medium	
Ginkgo biloba (male only)	Ginkgo	No	Large	Male variety only
Gleditsia triacanthos var. inermis (most cultivars)	Thornless honeylocust	No	Large	
Liriodendron tulipifera	Tuliptree	Yes	Large	

Malus sp.	Flowering crab apple	No	Small	Suitable in small boulevard, select fruitless or persistent fruit varieties (Makamik, Snowdrift, White angel)
Ostrya virginiana	Ironwood	Yes	Small	
Platanus x acerifolia	London planetree	No	Large	
Pyrus calleryana 'Bradford', 'Chantincleer', 'Redspire'	Bradford pear	No	Medium	
Quercus species	Oak	Yes	Large	
Syringa reticulata"Ivory Silk"	'Ivory Silk' Japanese tree lilac	No	Small	
Tilia x euchlora	Crimean linden	No	Large	
Tilia americana'Redmond'	Basswood	Yes	Large	
Tilia cordata var.	Littleleaf linden	No	Medium	
Ulmus x 'Pioneer'	'Pioneer' elm	No	Large	

Notes for Table 5.4:

i. 'Native' refers to species that naturally occur within Halton Region.

The use of all *Fraxinus* (ash) species and *Acer platanoides* (Norway maple) and its cultivars will not be approved.

5.17.3.1 Salt Tolerance

Table 5.5 provides a list of trees that are moderately salt tolerant.

Table 5.5 Salt Tolerant Tree Species

Botanical Name	Common Name	Native	Size Class at Maturity	General Comments
Coniferous Trees				
Picea pungens	Colorado spruce		Large	
Picea pungens 'Glauca'	Blue spruce		Large	
Pinus banksiana	Jack pine		Large	
Pinus nigra	Austrian pine		Large	
Deciduous Trees				
Gleditsia triacanthos var. inermis	Thornless honeylocust		Medium	
Pyrus calleryana 'Bradford'	Bradford pear		Medium	
Sorbus aucuparia	European mountain-ash		Small	
Tilia cordata var.	Littleleaf linden		Medium	

Notes for Table 5.5:

i. These salt tolerant tree species have a rating of 1 and 2 out of a possible 5 according to Salt Damage to Roadside Plans (Ontario Ministry of Agriculture, Food, and Rural Affairs).

5.17.4 Grasses and Forbs

5.17.4.1 Species

Table 5.6 provides a list of suitable native grass and forb species for naturalized areas within parks and open spaces.

Table 5.6 Recommended Grass and Forb Species

Botanical Name	Common Name	Common
Andropogon scoparius	Little bluestem	Yes
Sorghastrum nutans	Indian Grass	Yes
Elymus virginicus	Virginia Wild Rye	Yes
Anemone Canadensis	Canadian Anemone	Yes
Aquilegia Canadensis	Eastern Columbine	Yes
Asclepias incarnate	Swamp Milkweed	Yes
Asclepias tuberosa	Butterfly Weed	Yes
Aster ericoides	White Heath Aster	Yes
Aster novae-angliae	New England Aster	Yes
Calamagrostis Canadensis	Canada Blue-Joint	No
Carex vulpinoides	Fox Sedge	Yes
Desmodium canadense	Showy Tick Trefoil	Yes
Elymus Canadensis	Canadian Wild Rye	Yes
Elymus riparicus	Riverbank Wild Rye	Yes
Eupatorium perfoliatum	Boneset	Yes
Helianthus divericatus	Woodland Sunflower	Yes
Heliopsis helianthoides	Ox Eye Sunflower	Yes
Leersia oryzoides	Cut Grass	No
Lolium multiflorum	Annual Rye Grass	Yes
Lupinus perennis	Wild Lupine	Yes
Monarda fistulosa	Wild Bergamot	Yes
Panicum capillare	Switchgrass	Yes
Panicum linearifolium	Panic Ggrass	Yes
Penstemon digitalis	Beard Tongue	Yes
Rudbeckia hirta	Black-Eyed Susan	Yes
Solidago nemoralis	Grey Goldenrod	Yes
Verbena hastate	Blue Vervain	Yes

5.17.5 Planting Specifications

Refer to the Planting TMSDs for typical tree and shrub planting details.

5.17.5.1 Plant List

All developments requiring a landscape submission must include a completed Plant List, sealed by an Ontario Landscape Architect.

Table 5.7 Example Plant List Table

Key	Quantity	Botanical Name	Common Name	Size[(i)]	Spacing	Condition/ Remarks
Aa	5	*Latin*	English		6.0 m	
Bb	14	*Latin*	English		9.0 m	
Cc	8	*Latin*	English		11.0 m	

Notes for Table 5.7:

i. 'Size' is to include calliper, height, and spread.

Any species substitutions or changes to the condition or size of plant material must be approved by the Town, or appropriate Conservation Authority prior to installation.

For tree planting in parks and open space and within municipal ROW, minimum calliper for trees is 60 mm, minimum height for coniferous trees is 150 cm, and minimum height for a shrub is 60 cm. Container grown is preferred for shrubs and preferred condition for trees is B/B (Ball and Burlap) or W/B (Wire Basket).

5.17.5.2 Topsoil Testing

Testing of all topsoil sources is required. Topsoil used on-site must meet or exceed Town criteria as specified in Section 5.17.5.7 (Planting Materials).

Testing associated with conveyance of parks and open spaces will be at the Owner's expense.

Conform to recommendations from soil testing agency with respect to improvement of tested topsoil. Adjust soil amendment requirements and rates as well as addition of other additives, to conform to soil testing recommendation, at no extra cost to the contract.

The Town reserves the right to test any soil associated with boulevard planting, open spaces areas, park blocks, or any other blocks conveyed to the Town.

5.17.5.3 Product Delivery, Storage, and Handling

Store and protect fertilizer, limestone, bone meal, mulching materials, and similar products to prevent damage from moisture. Labels shall indicate weight, analysis, and

name of manufacturer.

Supply plant material as specified on the approved plant list. Receipts are to be provided to the Town to verify species and quantities.

Plants specified B/B (Ball and Burlap) or W/B (Wire Basket) on the plant list shall be moved with root systems as solid units, with balls of earth firmly wrapped with burlap, as per industry practice. The diameter and depth must be sufficient to encompass a fibrous and feeding root system necessary for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been cracked or broken preparatory to, or during planting, or after the burlap, staves, ropes, or platform required in connection with its transplanting has been removed. All balled plants that cannot be planted at once shall be kept watered and shaded from the sun. The least possible time shall elapse between the digging of the tree and its final planting. The entire root system of all plant material shall be kept moist and at no time shall the root system be exposed to drying winds or air.

Should temporary storage of plant material be necessary on the site, such plant material shall be heeled in by the Contractor, using good loam. Contractor shall be responsible for all necessary watering and maintenance to preserve the stock in good condition.

All plant material shall be properly top pruned to compensate for any loss of root when dug at the nursery, thus enabling the plant to attain more quickly a natural balance between root and top growth. Pruning shall be done at the centre rather than heading back.

Transport plants with branches tied to prevent damage, and padded to avoid abrasion from equipment. Protect drying out of roots, root balls, trunks, branches, and leaves, of plants from time of removal at place of origin until they are planted. While temporarily stored at site, protect them with soil or similar materials and keep moist.

5.17.5.4 Post-Installation Care

Water all plant material upon planting and water sufficiently until acceptance of plant material at the time of substantial performance of the contract. Water sufficiently to maintain optimum growing conditions for each plant. If installation is completed in the fall, ensure adequate moisture in root zone at freeze-up.

Maintain all plant materials and planting areas immediately after plants have been planted and continue such maintenance until substantial performance of the contract is complete. Maintenance shall include all measures necessary to establish and maintain plant materials in a vigorous, healthy growing condition including installation of water bags.

The Owner is responsible for regular maintenance activities (watering, grass cutting, pruning, fertilizing etc.) once plant material is accepted. The Owner is responsible to monitor plant material during the guarantee period and to advise of any changes in the

maintenance activities required to ensure plant survival.

The Owner is responsible to maintain all plant and tree accessories, such as tree wrappings, stakes, water bags, and similar items from time of installation until expiration of guarantee (minimum one year).

Cultivate and keep planting beds and tree saucers free of weeds, debris, broken branches, and maintain planting beds in a neat condition at all times until Final Acceptance.

5.17.5.5 Guarantee

Guarantee planting for a period of **2 years** from the date of acceptance. Trees and shrubs found to be dead, defective, or not in a healthy, growing condition shall be replaced and re-guaranteed for an additional 2 years dated from the date of replacement. The Town and the Owner may negotiate a cash-out quantity in lieu of the original and/or extended warranty.

5.17.5.6 Replacements

Replace, during next planting season, trees and shrubs which failed to survive and/or as directed by the Town. Replacements are subject to same approval and guarantee conditions specified for initial planting. Continue this replacement process until all specified trees and shrubs are well established.

5.17.5.7 Planting Materials

a. Select Topsoil:

   Topsoil means those horizons in a soil profile containing organic material and includes deposits of partially decomposed organic matter, such as leaf mulch (technically known as the 'O' and 'A' horizons). The required topsoil must be friable, fertile, supportive of vigorous plant growth, and contain no less than 4.0% organic matter. It shall be generally free of deleterious material, weeds, and stones. No stones greater than 25 mm are permitted. Soil quality shall meet or exceed MECP criteria. It also must have a pH level between 6.0 and 7.0 (i.e., must be pH neutral).

   The Owner must provide the Town with a Horticultural Suitability Test verifying micro and macro nutrient percentages, pore space ratios, sand-silt-clay ratios, N, P, K content, Mg content, soluble salt content, organic matter content, pH level, atrazine content level, and supplier information to confirm that the topsoil is conducive to support the desired plant growth, such as turf, trees, shrubs etc.

b. Topsoil Testing:

The Owner must submit test results to the Town. Cost of the testing shall be borne by the Owner. Inspection and testing of topsoil will be carried out by a testing laboratory approved by the Town.

In the event the test results indicate that the topsoil does not meet Town Standards for an appropriate growing medium, the Owner is required to take necessary remedial action. This includes but is not limited to, adjusting fertilizer requirements and rates as well as addition of other additives, to conform to the soil testing recommendation. This remedial work shall be at no cost to the Town.

c. Leaf Mulch:

Decomposed plant material, fairly elastic and homogenous, free of decomposed colloidal residue, wood, sulphur, and iron. The preferred soil amendment materials are composted leaf mulch and composted manure.

d. Bonemeal:

Raw, commercial, finely ground, and with a content of minimum 4.0% Nitrogen and 20.0% Phosphoric Acid.

e. Fertilizer:

Shall be complete commercial fertilizer 50.0% of the elements of which shall be derived from organic sources, and shall contain no less than 60.0% urea formaldehyde with the following percentages by weight of nitrogen, phosphoric acid, and potash in that order for:

Trees: 10-6-4
Shrubs: 12-6-6 (or as indicated in soil test)

5.17.5.8 Planting Accessories

a. Anchors:

For support of large shrubs and trees up to (90 mm) in calliper use new metal 'T' bars (38 mm x 38 mm x 5 mm).

b. Hose:

New black rubber hose (12.7 mm Ø), two ply reinforced

c. Mulch:

   Shredded Pine Bark Mulch of fine, uniform particle size, natural in colour. Depth of mulch to be 75 mm compacted depth over root ball. Mulch shall to extend out 300 mm past the root ball of the (regardless of tree size), not to be in contact with the trunk of the plant, and is to be placed no more than 48 hrs after planting.

d. Water:

   Potable.

e. Rodent Protection:

   Shall be required in areas of naturalized planting.

5.17.5.9 Plant Material

Conform to the horticultural standards of the Canadian Nursery Trades Association with respect to grading and quality. Supply in strict accordance with plant list.

Substitutions for the specified plants will not be accepted unless approved in writing by the Town. All materials that are not available shall be brought to the attention of the Town, at the earliest time possible.

Give timely notice, in writing, to the Town when applying for substitutions.

Measure plants when branches are in their natural positions. Height and spread dimensions refer to main body of plant and from branch tip to branch tip. Measure calliper 300 mm above ground level. Use trees and shrubs of No. 1 grade.

Label each plant to type, grade, and size.

Use trees and shrubs with strong fibrous root systems free of disease, insects, defects, or injuries and structurally sound. Crowns are to be fully leafed with a uniform shape. Use trees with straight trunks well and characteristically branched for the species with a uniform, fully developed crown. All trees are to have a single straight leader. Plants must have been transplanted or root pruned regularly but not later than 9 months prior to arrival on-site.

Container grown stock is acceptable if containers are large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to ‘hold’ soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.

Balled and burlapped conifer, broad-leaf evergreens, and trees in excess of 3.0 m (10’) in height must have been dug with large firm ball. Measure calliper at 300 mm (12”)

above ground level. A tree with 75 mm (3”) calliper requires root ball of 1.0 m (40”) Ø. Increase diameter of root ball by 250 mm (10”) with each increase of 25 mm (1”) in calliper. Root balls of proper size must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Secure root balls with hessian burlap, heavy twine, and rope. Frozen root balls will be permitted provided root balls are sufficiently protected to prevent breakage. Protect root balls from sudden changes in temperature and exposure to heavy rainfall.

5.17.5.10 Planting Time

Ensure that watering facilities are available. Take particular care when planting in the heat of summer.

Plant only under conditions that are conducive to good health and physical conditions of plants as practised in the nursery profession.

Plant material noted by the Landscape Architect for spring planting must only be planted in its dormant period.

Provide the Town with a planting schedule. Extended planting operations over a long period using a limited crew will not be accepted.

Planting to be completed with dates approved by the Town.

5.17.5.11 Planting Mix Preparation

Backfill planting beds and tree pits with a planting mix consisting of 6 parts good quality topsoil, 2 parts well rotted cow manure, and 1 part leaf mulch per the Town’s planting details.

Add bonemeal to the mixture at a rate of 0.6 kg/m3.

Commercial fertilizers will be added in accordance with the soil testing report.

Backfilling and mixing planting mix shall be done under favourable weather conditions.

Allow for settlement when backfilling. Place mix in 150 mm layers and tamp each layer before placing next layer.

The use of native soil may be used as backfill for trees, at the discretion of the Town.

5.17.5.12 Planting Procedures

Plant trees and shrubs vertically, in the centre of pits. No tree pits are to be left open at any time.

Place all plant material to a depth equal to the depth originally grown in the Nursery. Allow for settlement when installing plants.

Tamp planting soil mix around root system in layers of 150 mm depth eliminating air pockets. Frozen or saturated planting soil mix is unacceptable. When 2/3 of the topsoil mixture has been placed, fill hole with water. After water has completely penetrated the soil, complete backfilling.

Build a 100 mm lip around outer edge of hole to assist in maintenance watering.

When planting is completed give surface of planting hole a dressing of organic 10-6-4 fertilizer at the rate of 4.5 kg/100 m2 for shrubs and at 0.2 kg/24 mm of calliper for trees. Mix fertilizer with top layer of topsoil mixture and water immediately after planting.

5.17.5.13 Tree Supports

Install support as detailed for specified tree.

Ensure tree is plumb after staking.

Place stakes so as not to damage root ball.

Keep cables taut at all times.

Place stake on side of prevailing winds, or uphill side.

Prune only as necessary to remove dead and broken branches and to compensate for the loss of roots from transplanting.

Preserve the natural form and character of plants.

Use only sharp, clean tools and make cuts flush without leaving stubs.

5.17.5.14 Mulching

Obtain the Town's approval of planting and mulch before application.

Loosen soil in planting beds and pits and remove all debris and weeds prior to mulching.

Material to be shredded pine bark mulch.

5.17.5.15 Maintenance Period

During the Maintenance Period, the Owner must maintain all plants in a vigorous and healthy growing condition, including but not limited to:

- Cultivating and weeding of planting beds and tree pits.
- Watering when required and in sufficient quantities to saturate the root system.
- Pruning, including the removal of dead or broken branches.
- Controlling for disease and insects when required and in accordance with Town approval. Make good any damage at no cost to the Town.
- Keeping all accessories in good condition and properly adjusted. Repair or replace accessories when required at no cost to the Town.

5.17.5.16 Final Acceptance

Planting will be inspected prior to the Maintenance Period and again before assumption.

Plant material will be accepted only if it is in a vigorous, healthy, growing condition, in full leaf with no more than 20% dieback.

All beds, and tree pits must be freshly cultivated and free of weeds, rubbish, and debris.

5.17.6 Sodding

5.17.6.1 Delivery and Storage

Schedule delivery in order to keep storage on the job site to a minimum without causing delays.

Deliver, unload, and store sod on pallets.

Deliver sod to site within 24 hours of being lifted and lay sod within 36 hours of being lifted.

Do not deliver small, irregular, or broken pieces of sod.

During dry weather protect sod from drying and water sod as necessary to ensure its vitality and prevent dropping of soil in handling. Sod which has dried out will be rejected.

5.17.6.2 Scheduling of Work

Schedule sod laying to coincide with topsoil operations. Do not begin to install sod without inspection and approval of topsoil preparation. Topsoil to be free of stones, debris, and weeds and fine graded to grades indicated on plan prior to start of sodding operation.

5.17.6.3 Acceptance

Sodded areas will be accepted at the end of the Maintenance Period provided that:

- Sod is properly established
- Turf is free of bare or dead spots and weeds.
- Sodded areas have been cut within 24 hours prior to acceptance inspection

5.17.6.4 Materials

Turf grass nursery sod, specially sown, and cultivated in nursery field, all in compliance with the specifications latest issue of the Nursery Sod Growers Association of Ontario for (A) Number One Kentucky Bluegrass-Fescue Sod. Topsoil used on-site must meet or exceed Town criteria. Refer to Sections 5.17.5.2 (Topsoil Testing) and 5.17.5.7 (Planting Materials).

5.17.6.5 Placement

Sodding during dry weather is acceptable only if sufficient and continuous watering is assured.

Where slippage of sod is likely to occur because of the degree of slope pegging is required. When sod is established, drive wooden sod pegs flush with sod.

Obtain the Town's approval of the topsoil spreading and fine grading prior to beginning sodding. Topsoil is to be weed-free. Cultivate to a depth of 100 mm and remove weeds. Lay sod even with adjoining landscape areas. The rows shall have staggered joints. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections.

Provide close contact between sod and soil by means of light roller. Heavy rolling to correct irregularities in grade is not permitted.

Water immediately after laying to obtain moisture penetration through sod into top 150 mm of topsoil.

Provide adequate protection of sodded areas against erosion and other damage.

Remove this protection after sod has become established.

5.17.6.6 Maintenance

It is the Contractor's responsibility to maintain the sodded areas in good condition until the Final Acceptance of the project. Maintenance includes but is not limited to weeding, fertilizing as required by soil tests, cutting as required to maintain sod at a maximum height of 60 mm, and watering. Sod to be cut at least twice during Maintenance Period.

Water sodded areas to sustain its vigor and growth and prevent deterioration. The Contractor is responsible for supplying water to the site. For other requirements, refer to Section 5.17.7.3 (Delivery and Packaging – c. Maintenance).

5.17.7 Seeding

5.17.7.1 Grass Seed Mixtures

Schedule delivery in order to keep storage on the job site to a minimum without causing delays.

a. Outfield Mix:

'Futura Sport' sports turf by Pickseed Canada Inc., Box 304, Lindsay, Ontario, K9V 4S3 Tel: (705) 878-9240, Fax: (705) 878-9249 (or approved equal).

For sports fields and high traffic areas that require deep roots and wear resistance.

Contents:	25%	Indigo Kentucky Bluegrass
	25%	Touchdown Kentucky Bluegrass
	25%	Jasper Creeping Red Fescue
	25%	Cutter Perennial Ryegrass

Seeding rate: 1.5 kg/100 m^2 (3 lbs/1000 ft^2)

b. Park Mix:

'Greenscape' by Pickseed Canada Inc. Box 304, Lindsay, Ontario, K9V 4S3 Tel: (705) 878-9240, Fax: (705) 878-9249 (or approved equal).

For general parkland areas with normal foot traffic (such as around sports fields) on a regular maintenance schedule.

Contents:	30%	Edge Perennial Ryegrass Endophyte Enhanced
	30%	Premium Kentucky Bluegrass GroKoted
	40%	Creeping Red Fescue

Seeding rate: 1.8 kg/100 m^2 (4 lbs/1000 ft^2)

c. Low Mow Mix:

'Lowgrow' by Pickseed Canada Inc. Box 304, Lindsay, Ontario, K9V 4S3 Tel: (705) 878-9240, Fax: (705) 878-9249 (or approved equal).

For areas where lower and slower growing grass requiring less mowing is desirable.

Contents: 100% Perennial Ryegrass

Seeding rate: 2.9 to 3.4 kg/100 m^2 (6 to 7 lbs/1000 ft^2)

d. No Mow Mix:

'Greenfields' by Pickseed Canada Inc., Box 304, Lindsay, Ontario, K9V 4S3 Tel: (705) 878-9240, Fax: (705) 878-9249 (or approved equal).

For areas that do not require regular maintenance and are not subject to a great deal of foot traffic.

Contents:	30%	Mustang Tall Fescue (turf-type)
	35%	Spartan Hard Fescue
	15%	Strawberry Clover
	3%	Arrow Mixed Colours
	17%	Pickseed 14 Species Wildflower Blend (or approved equal)

Seeding rate: 15 to 25 kg/ha

e. Naturalization Mixes:

Refer to Section 5.18 (Naturalization) for design criteria or as approved by other authority having jurisdiction.

Seed mixes to be created on a case-by-case basis recognizing the following criteria:

- Water regime
- Soil conditions
- Human activity
- Existing vegetation
- Salt tolerance
- Sunlight availability
- Erosion control requirement
- Active or passive naturalization

Installer to provide the Town and/or Conservation Authority with the packing receipts verifying the species content, percentages, and supplier.

Refer to Section 5.17.11 (Native Plant Species) for species that are regionally native, and wildflowers of the Niagara Escarpment.

Refer to Section 5.17.12 (Invasive Plant Species).

Refer to Section 5.17.4 (Grasses and Forbes) for some suitable grass and forb

species.

Seeding rate: specific to the proposed mix.

Use on-site seed bank material where appropriate.

f. Interim Seeding:

All interim seeding placed for quick cover must be compatible with, but not jeopardize, the survival of the approved seeding mix. The interim mix must consist of no-maintenance, native, non-invasive herbaceous species. Annual rye and winter wheat may be suitable.

g. Mechanical Seeding:

Shall be required in areas of naturalized planting. Any use of pesticides must be approved prior to use by the Town.

5.17.7.2 Product Handling

Use all means necessary to protect material before, during and after installation. Provide adequate protection to material which may deteriorate if exposed to elements.

In the event of damage or rejection, make immediate repairs or replace materials at no extra cost to the Town.

5.17.7.3 Delivery and Packaging

a. Fertilizer:

Packaged in waterproof bags, with a label clearly indicating net mass, analysis and manufacturer.

Store on pallets and protect from the elements.

Grass Seed packaged and labelled clearly indicating:

- Analysis of seed mixture.
- Percentage of pure seed.
- Year of production.
- Net mass.
- Date tagged and location.
- Percentage germination.
- Name and address of distributor.

b. Site Conditions:

Immediately after seeding, erect snow fencing to protect seeded areas from traffic until seed is established.

Contractor is responsible for maintaining snow fencing until project is accepted.

Keep site well drained and landscape excavations dry.

Clean up immediately any soil or debris spilled onto pavement or concrete.

c. Maintenance:

Maintain seeded areas for 60 days until acceptance of seeding work. Maintenance includes, but is not limited to, weeding, fertilizing as required by soil tests, cutting as required to maintain turf grass at a maximum height of 40 mm, and watering. Turf grass is to be cut at least twice during the Maintenance Period.

Water seeded areas to sustain its growth and prevent deterioration. Contractor is responsible for supplying water to the site.

Ensure maintenance equipment is suitable to the Town.

Keep soil moist during germination period and adequately water grassed areas until accepted by the Town.

Apply water to ensure moisture penetration of 75 to 100 mm. Control watering to prevent washouts.

Cut turf grass to 40 mm when it reaches height of 60 mm. Do not cut more than 33% of blade at any one mowing. Remove clippings. An inspection will be performed to determine final Acceptance.

Maintain grassed areas free of pests and disease, in accordance with Town policies.

Re-seed areas which show root growth failure, deterioration, bare or thin spots, or which have been damaged by any means, including replacement operations.

Contractor is to provide 3 applications of fertilizer in the first year of maintenance. The timing of fertilizing will depend on when seeding is completed. If seeding is completed in the spring, the second application of fertilizer is to be applied in late June or early July as weather permits. Coverage is not to exceed 3.0 kg/100 m^2 and shall be applied evenly and watered in well. The third application of fertilizer is to be applied in September or October weather permitting.

If seeding is applied in early August, the second application of fertilizer will occur in September or October weather permitting, and the third application in the following

spring as weather permits.

d. Acceptance:

Areas will be accepted by the Town provided that:

- A full growing season has passed.
- There are no invasive species present.
- Seeded and sodded areas are properly established and the germination reflects the seed composition, including cover crop, grass, and forb species.
- The installer to has provided the Town and/or the Conservation Authority with the packing receipts verifying the species content, percentages and supplier.
- Turf areas are free of eroded, bare or dead spots and 98% free of weeds.
- No surface soil is visible when grass has been cut to height of 60 mm.

To meet Acceptance, the following activities may be required:

- Re-seeding and/or re-sodding of bare or distressed areas.
- Over-seeding if the cover crop, grass, and/or forb species have not established.
- Continued weed control, by manual methods only, in areas where non-native or invasive species have established. The use of any other method is at the discretion of the Town.

e. Warranty:

Warranty all seeded areas for 2 years from date of acceptance and re-seed all areas which have failed to establish into a healthy, vigorous stand.

f. Materials:

i. Fertilizer: Complete commercial fertilizer as recommended by soil test, minimum of 50% of elements derived from organic sources.

ii. Grass Seed: Canadian No. 1 seed mixture in accordance with the Canadian Seeds Act, having minimum purity of 97% and germination of 75%.

iii. Mulch: Material shall be capable of dispersing rapidly in water to form a homogeneous slurry and remain in such a state when agitated or mixed with other materials. When applied, the hydraulic mulch shall be capable of forming an absorptive mat, which will allow moisture to percolate into the underlying soil. It shall contain no growth of germination inhibiting factors. The mulch shall be dry, free of weeds and all other foreign material, and shall be supplied in packages labelled to indicate weight.

The hydraulic mulch shall be a mixture consisting of cellulose pulp and natural sun dried plant fibres processed in lengths between 15 mm and 25 mm.

iv. Water: Potable and free of impurities that would inhibit germination.

5.17.7.4 Quality of Work

Keep site well drained.

Immediately clean up any soil, mulch, or other debris spilled onto pavement and dispose of deleterious materials.

Take reasonable care to prevent contamination by seeding slurry of structures, signs, guide rails, fences, and utilities.

Where contamination occurs, remove seeding slurry to the satisfaction of the Town.

a. Preparation of Surfaces:

   All areas to be seeded and mulched shall be fine graded to a uniform surface and the surface materials shall be loosened to a depth of 25 mm, whether or not topsoil has been applied. These areas shall be so maintained until they are seeded and mulched. Stones and all other surface litter shall be removed and disposed of outside the ROW at locations arranged for by the contractor.

   Obtain the Town's approval of seed bed preparation including topsoil grades, and depth before starting seeding. No hydro-seeding will be accepted unless seed bed preparation has been inspected and approved prior to completion of work.

b. Seeding:

   Seed area during early spring or between August 15 and September 15.

   Apply when winds less than 10 km/h using equipment suitable for area involved to the approval of the Town.

   Measure quantities of material by mass or mass-calibrated volume measurement to the satisfaction of the Town.

   Seed, fertilizer, and hydraulic mulch shall be thoroughly mixed in a water slurry and be distributed uniformly over the surface area via an approved hydraulic mulcher.

   The Contractor shall measure the quantities of each of the materials to be charged into the hydraulic mulcher, either by weight or by a system of mass calibrated volume measurements. After charging, no water or other material shall be added to the mixture in the hydraulic mulcher.

5.17.8 Conveyance of SWM Pond Buffers, Channel Buffers, and Woodlot Buffers

As directed by Subwatershed Impact Studies, and detailed further through the draft plan process, buffer blocks are required to be conveyed to the Town. In order to convey these buffer blocks in an acceptable manner, the Town has drafted three details that stipulate what type of grading, seeding, and planting regime are acceptable within these buffers for appropriate conveyance to the Town. Refer to TMSDs (Buffers) for more information regarding these buffer blocks. Details are to be incorporated in the Landscape drawing submission as required by the Town.

5.17.9 Owner-Built Parks Policy

Community Services administers the Park Construction and Methods Policy (2008, as amended) as applicable to parks built by the development community.

5.17.10 Standard General Planting Notes

1. All work to be to the standards of the Ontario Landscape Contractors Association and/or the Canadian Landscape Standard.

2. All nursery stock shall meet the Canadian Standards for nursery stock.

3. All plant material shall be staked for location by Landscape Architect, Town and Contractor jointly.

4. Backfill shall consist of soil native to the site with any amendments as specified.

5. All trees shall have an earth saucer at its base with a diameter as large as excavated area for water retention.

6. All burlap shall be cut and buried below surface during planting with the exception of synthetic fibre and treated burlap, which shall be completely removed and legally disposed of.

7. Contractor shall maintain all landscape areas until Owner's acceptance of project.

8. Unless otherwise stated, all work shall conform to the Landscape Ontario and/or the Canadian Landscape Standard specifications standards.

9. Spread shredded pine bark mulch to a minimum 75 mm compacted depth on all tree pits and planting beds.

10. Staking of trees shall be as per detail drawings provided. Alternative methods may

be acceptable with the approval of the landscape architect prior to installation.

11. Report all discrepancies in writing to the landscape architect.

12. Contractor to locate all underground utilities.

13. Planting may be adjusted to suit locations of site utility structures/services.

14. Planting beds are to be mounded to a minimum of 150 mm.

15. All materials shall be approved by Landscape Architect prior to installation.

16. All plantings shall be guaranteed and maintained for a period of 2 years from the date of acceptance of the plantings, or subdivision assumption, whichever occurs later. Trees and shrubs found to be dead, defective, or not in a healthy growing condition at the end of this period shall be replaced and re-guaranteed for an additional 2 years from the date of replacement.

17. Check and verify all dimensions and quantities prior to commencement of work. Any discrepancies are to be reported to the Landscape Architect. Quantities noted within the plan supersede those in the plant schedule. Any substitutions are to be approved by the Landscape Architect, in consultation with the Town.

18. Protective measures shall be installed as requested by the Town. Tree guards and planting accessories shall be removed prior to acceptance or subdivision assumption.

19. Final Inspection and acceptance of planting work shall coincide with the Final Inspection and Acceptance of all work included in the Contract.

20. At the time of Final Inspection all plants shall be in a healthy, vigorous growing condition, planted in full accordance with drawings and conditions. Girdled trees will not be accepted.

21. Deciduous tree plantings shall be limbed up to 1.8 m clearance and/or regulatory sign locations are to be adjusted, as directed by the Town, prior to granting the start of the Maintenance Period for the development.

22. Trees shall not be planted in swales.

5.17.11 Native Plant Species

From the Carolinian forests on the Lake Ontario shoreline to ancient cedar stands along the escarpment and vast tracts of woodlands in Nassagaweya, Halton contains a rich and diverse natural heritage. Tables 5.8 through 5.10 have been prepared to provide guidance in the selection of native plant species that are biologically appropriate for

re-planting, naturalization, and restoration projects in our Region. These tables are based on species that naturally occur in our Region, and are generally available from commercial sources.

Table 5.8 Trees, Shrubs, and Vines

Botanical Name	Common Name	Habitat[i]	Notes[ii]
Acer rubrum	Red Maple	F, W	
Acer saccharum ssp. Saccharum	Sugar Maple	F	H
Amelanchier arborea	Downy Serviceberry	F, M	H
Amelanchier laevis	Smooth Serviceberry	F, M	
Amelanchier sanguinea	Shadbush	F, M	
Betula alleghaniensis	Yellow Birch	F	
Betula papyrifera	White or Paper Birch	F	
Carpinus caroliniana	Ironwood	F	
Carya cordiformis	Bitternut Hickory	F	
Carya ovata	Shagbark Hickory	F	C
Celastrus scandens	Bittersweet	F, M	H
Clematis virginiana	Virgin's-bower	W	
Cornus alternifolia	Alternate leaved Dogwood	F	C
Cornus florida	Flowering Dogwood	F	C
Cornus foemina ssp. racemosa	Grey Dogwood	M	
Cornus stolonifera	Red-osier Dogwood	M, W	H
Corylus cornuta	Beaked Hazel	F	
Crataegus spp.	Hawthorn spp.	F, M	H
Dirca palustris	Leatherwood	F	
Euonymus obovata	Running Strawberry-bush	F	C
Fagus grandifolia	American Beech	F	
Fraxinus americana	White Ash	F	
Fraxinus pennsylvanica	Red Ash	F, W	
Hamamelis virginiana	Witch-hazel	F	C
Juglans nigra	Black Walnut	F	C
Juniperus virginana	Eastern Red Cedar	M	R
Lindera benzoin	Spicebush	F, W	C
Ostrya virginiana	Hop Hornbeam	F	

Parthenocissus inserta	Virginia Creeper	F, M	H
Pinus strobus	Eastern White Pine	F	H
Populus balsamifera	Balsam Poplar	W	
Populus deltoides	Cottonwood	F	C
Populus grandidentata	Large-toothed Aspen	F	
Populus tremuloides	Trembling Aspen	F, W	
Prunus nigra	Canada Plum	F	
Prunus pensylvanica	Fire or Pin Cherry	F, M	
Prunus serotina	Black Cherry	F	
Prunus virginiana	Chokecherry	F, M	H
Quercus alba	White Oak	F	H
Quercus macrocarpa	Bur Oak	F	
Quercus rubra	Red Oak	F	H
Quercus velutina	Black Oak	F	C
Rhus typhina	Staghorn Sumac	M	H
Rosa blanda	Smooth Wild Rose	M	
Rubus odoratus	Flowering Raspberry	F	
Salix amygdaloides	Peach-leaved Willow	M	
Salix bebbiana	Beaked Willow	M	
Salix discolor	Pussy Willow	M	
Sambucus canadensis	Elderberry	M	
Sambucus racemosa ssp. pubens	Red-berried Elder	F	
Staphylea trifloia	Bladdernut	F	C
Symphoricarpos albus	Snowberry	F	
Taxus canadensis	American Yew	F	
Thuja occidentalis	Eastern White Cedar	F, W	H
Tilia americana	Basswood	F	
Tsuga canadensis	Eastern Hemlock	F	
Viburnum acerifolium	Maple-leaved Viburnum	F	
Viburnum lentago	Nannyberry	F, M, W	H
Viburnum trilobum	Highbush Cranberry	W	
Vitis riparia	Riverbank Grape	F, M, W	
Zanthoxylum americanum	Prickly Ash	F, M	C

Notes for Table 5.8:

i. Habitat Key is as follows:

F – Forest, woodlands, and other shady sites.
M – Meadows, prairies, and other sunny, dry to moist, sites.
W – Wetlands and other moist sites, including marshes and swampy areas.

ii. Notes Key is as follows:

C – Carolinian species; Generally confined to the southern part of the Region.
H – Highly recommended; Readily available, and perform well in naturalized settings.
R – Regionally rare species; Generally restricted to specific habitats (e.g., prairie).

Table 5.9 Wildflowers

Botanical Name	Common Name	Habitat[(i)]	Notes[(ii)]
Actaea pachypoda	White Baneberry	F	
Actaea rubra	Red Baneberry	F	
Allium tricoccum	Wild Leek	F	
Anemone canadensis	Canada Anemone	F, M, W	
Anemone virginiana	Thimbleweed	F, M	
Antennaria neglecta	Field Pussytoes	M	
Apocynum androsaemifolium	Spreading Dogbane	M	
Aquilegia canadensis	Wild Columbine	F, M	H
Asarum canadense	Wild Ginger	F	
Asclepias syriaca	Common Milkweed	M	
Asclepias tuberosa	Butterfly-weed	M	R
Aster cordifolius	Heart-leaved Aster	F, M	H
Aster laevis	Smooth Aster	M	
Aster macrophyllus	Large-leaved Aster	F	H
Aster novae-angliae	New England Aster	M	H
Caltha palustris	Marsh Marigold	W	
Circaea lutetiana ssp. Canadensis	Enchanter's Nightshade	F	
Desmodium canadense	Showy Tick-trefoil	F, M	H
Desmodium glutinosum	Wood Tick-trefoil	F	
Dicentra canadensis	Squirrel-corn	F	

Epilobium angustifolium	Fireweed	M	R
Eupatorium maculatum	Spotted Joe Pye Weed	W	H
Eupatorium perfoliatum	Boneset	W	
Eupatorium rugosum	White Snakeroot	F	H
Euthamia graminifolia	Grass-leaved Goldenrod	F, M, W	
Galium aparine	Cleavers	F	
Geranium maculatum	Wild Geranium	F	
Helianthus divaricatus	Woodland Sunflower	F, M	
Hydrophyllum virginianum	Virginia Waterleaf	F	
Lespedeza capitata	Round-headed Bush Clover	M	R
Lilium michiganense	Canada Lily	F, W	
Lobelia cardinalis	Cardinal Flower	W	
Mitella diphylla	Bishop's Cap	F	
Monarda fistulosa	Wild Bergamot	M	H
Oenothera biennis	Common Evening-primrose	M	
Oenothera parviflora	Small-flowered Evening-primrose	M	
Osmorhiza claytonii	Hairy Sweet Cicely	F	
Penstemon digitalis	White Beard-tongue	M	
Penstemon hirsutus	Hairy Beard-tongue	M	
Phlox divaricata	Blue Phlox	F	
Rudbeckia hirta	Black-eyed Susan	M	H
Rudbeckia laciniata	Green-headed Coneflower	W	
Sanguinaria canadensis	Bloodroot	F	
Solidago caesia	Blue-stem Goldenrod	M	
Solidago canadensis	Canada Goldenrod	M	
Solidago flexicaulis	Zig-zag Goldenrod	F	H
Solidago nemoralis	Gray Goldenrod	M	
Thalictrum dioicum	Early Meadow Rue	F	
Verbena hastata	Blue Vervain	W	
Viola pubescens	Downy Yellow Violet	F	
Viola sororia	Common Blue Violet	F	
Wildflowers of the Niagara Escarpment[iii]			
Similacina racemose	False Solomon's Seal	-	-
Viola canadensis	Canada Violet	-	-

Cypripedium arietimum	Ram's Head Orchid	-	-
Calypso bulbosa	Calypso	-	-
Mitchella repens	Partridge-berry	-	-
Campanula rotundifolia	Harebell	-	-
Cypripedium reginae	Showy Lady's Slipper	-	-
Lobelia cardinalis	Cardinal Flower	-	-
Trillium undalatum	Painted Trillium	-	-
Trillium erectum	Red Trillium	-	-
Aquilegia canadensis	Columbine	-	-
Cypripedium calceolus	Yellow Lady's Slipper	-	-
Trillium cernuum	Nodding Trillium Seed	-	-
Corallorhiza striata	Striped Coral Root		
Orchis spectabilis	Showy Orchis		
Plantanthera psycodes	Small Purple Fringed Orchid		
Monotropa uniflora	Indian Pipe		
Actaea rubra	Red Baneberry		

Notes for Table 5.9:

i. Habitat Key is as follows:

F – Forest, woodlands, and other shady sites.
M – Meadows, prairies, and other sunny, dry to moist, sites.
W – Wetlands and other moist sites, including marshes and swampy areas.

ii. Notes Key is as follows:

C – Carolinian species; Generally confined to the southern part of the Region.
H – Highly recommended; Readily available, and perform well in naturalized settings.
R – Regionally rare species; Generally restricted to specific habitats (e.g., prairie).

iii. Species list provided by the Niagara Escarpment Commission (NEC). The following organizations can provide additional guidance and detail in the selection and design of native plant communities:

Conservation Halton can provide information on existing naturalized areas.

Society for Ecological Restoration publishes source list on native plant suppliers in Ontario and guidelines for design.

North American Native Plant Society provides information on local wildflower groups, native plant biology, and propagation.

Carolinian Canada provides information on the unique biology and conservation issues of Canada's most threatened eco-region.

Table 5.10 Grasses and Sedges

Botanical Name	Common Name	Habitat[(i)]	Notes[(ii)]
Andropogon gerardii	Big Bluestem	M	R
Carex arctata	Drooping Wood Sedge	F	
Carex communis	Fiberous Rooted Sedge	F	
Carex laxiculmis	Spreading Sedge	F	
Carex pedunculata	Long-stalked Sedge	F	
Carex pensylvanica	Pennsylvania Sedge	F	
Carex spp.	Sedge spp.	F, M, W	
Danthonia spicata	Poverty Oat Grass	M	
Elymus canadensis	Nodding Wild Rye	M	
Hystrix patula	Bottle-brush Grass	F	
Schizachyrum scoparius	Little Bluestem	M	R

Notes for Table 5.10:

i. Habitat Key is as follows:

F – Forest, woodlands, and other shady sites.
M – Meadows, prairies, and other sunny, dry to moist, sites.
W – Wetlands and other moist sites, including marshes and swampy areas.

ii. Notes Key is as follows:

C – Carolinian species; Generally confined to the southern part of the Region.
H – Highly recommended; Readily available, and perform well in naturalized settings.
R – Regionally rare species; Generally restricted to specific habitats (e.g., prairie).

5.17.12 Invasive Plant Species

Table 5.11 below, provides information on a variety of invasive plant species.

Table 5.11 Invasive Plant Species

Botanical Name	Common Name	Effect on Natural Areas	Rank[(i)]	Restriction
Abutilon theophrasti	Velvet-leaf	Invades meadows	3	Not adjacent to natural areas
Acer ginnala	Amur maple	Competes with early successional forest species	4	Not adjacent to natural areas
Acer negundo	Manitoba maple	Invades all habitat types	1	Not anywhere
Acer platanoides	Norway maple	Dominates forest canopy	2	Not anywhere
Acer pseudoplatanus	Sycamore maple	Dominates forest canopy	2	Not adjacent to natural areas
Aegopodium podagraria	Goutweed	Dominates forest understorey	1	Not adjacent to natural areas
Ailanthus altissima	Tree of heaven	Dominates early successional forest	2	Not adjacent to natural areas
Alnus incana sp. incana	European white alder	Often substituted for Alnus incana sp. rugosa	Potential concern	Not adjacent to natural areas
Berberis thunbergii	Japanese barberry	Invades forests	3	Not anywhere
Berberis vulgaris	Common barberry	Invades forests	3	Not anywhere
Betula pendula	European birch	Dominates open wetlands	2	Not adjacent to natural areas
Celastrus orbiculatus	Oriental bittersweet	Displaces native C. scandens	2	Not anywhere
Convallaria majalis	Lily-of-the-valley	Invades forest understorey	3	Not adjacent to natural areas
Coronilla varia	Crown vetch	Dominates forest herb layer	1	Not anywhere
Eleagnus angustifolia	Russian olive	Dominates meadow and shrub communities	3	Not adjacent to natural areas
Eleagnus umbellata	Autumn olive	Dominates forest edges	1	Not anywhere
Euonymus alatus	Burningbush	Invades forest understorey shrub layer	3	Not adjacent to natural areas
Euonymus europaeus	Spindle-tree	Invades forest understorey and edges	3	Not adjacent to natural areas

Glyceria maxima	Rough Manna grass	Dominates wet meadows	1	Not anywhere
Hedera helix	English ivy	Invades forest understorey	3	Not adjacent to natural areas
Lonicera japonica	Japanese Honeysuckle	Dominates forest understorey	1	Not adjacent to natural areas
Lonicera maackii	Amur honeysuckle	Invades meadows and forest edges	1	Not adjacent to natural areas
Lonicera morrowi	Morrow's honeysuckle	Invades meadows and forest edges	1	Not adjacent to natural areas
Lonicera tatarica	Tatarian honeysuckle	Invades meadows and forest edges	1	Not adjacent to natural areas
Lonicera xylosteum	European fly honeysuckle	Invades meadows and forest edges	1	Not adjacent to natural areas
Lotus corniculatus	Bird-foot trefoil	Dominates meadows and prairies	2	Not adjacent to meadows
Lysimachia nummularia	Moneywort	Dominates wet forest understorey	2	Not adjacent to natural areas
Lythrum salicaria	Purple loosestrife	Dominates wetlands	1	Not anywhere
Melilotus alba	White sweet clover	Dominates meadows and prairies	2	Not in natural meadows
Melilotus officinalis	Yellow sweet clover	Dominates meadows and prairies	2	Not adjacent to meadows
Miscanthus sinensis	Eulalia, silver grass	Dominates wet meadows	3	Not adjacent to natural areas
Morus alba	White mulberry	Hybridizes with rare M. rubra	1	Not anywhere
Myriophyllum spicatum	Eurasian watermilfoil	Dominates open water habitats	1	Not anywhere
Nymphoides peltatum	Floating heart	Dominates open water habitats	1	Not anywhere
Origanum vulgare	Oregano	Invades disturbed meadows	4	Not adjacent to natural areas
Phragmites australis	Common reed	Dominates wetland and wet meadows	1	Not anywhere
Pinus sylvestris	Scots pine	Invades meadows	2	Not anywhere
Polygonum cuspidatum	Japanese knotweed	Dominates wet meadows and moist forest	2	Not anywhere
Populus alba	White poplar	Invades meadows	2	Not anywhere

Populus x canadensis	Carolina poplar	Often substituted for P. deltoides	4	Not anywhere
Potamogeton crispus	Curly pondweed	Dominates open water habitats (SW Ont.)	1	Not anywhere
Robinia pseudo-acacia	Black locust	Invades meadows	2	Not anywhere
Rosa multiflora	Multiflora rose	Dominates forest edges	1	Not anywhere
Salis x rubens	Hybrid willow	Invades wetlands	3	Not anywhere
Salix alba	White willow	Invades wetlands	3	Not anywhere
Salix caprea	Goat willow	Often substituted for S. discolor	4	Not anywhere
Salix fragilis	Crack willow	Invades wetlands	3	Not anywhere
Salix purpurea	Purple willow	Invades wetlands	4	Not adjacent to natural areas
Scilla sibirica	Scilla	Dominates forest understorey	2	Not adjacent to natural areas
Sorbaria sorbifolia	False spirea	Invades meadows and forest understorey	3	Not adjacent to natural areas
Syringa vulgaris	Lilac	Dominates shallow limestone areas	2	Not adjacent to natural areas
Ulmus pumila	Siberian elm	Invades prairies	2	Not adjacent to natural areas
Vicia cracca	Cow vetch	Dominates meadows and prairies	2	Not adjacent to meadows
Vinca minor	Periwinkle	Dominates forest understorey	2	Not adjacent to natural areas (woodlots)

Notes for Table 5.11:

i. 'Rank' refers to how invasive a species is and the listed values are based on Sustaining Biodiversity (D. Havinga and the Ontario Invasive Plants Working Group).

   Rank definitions are as follows:

   1 – Excludes all other species and dominates sites indefinitely.
   2 – Highly invasive. Dominates niches or does not spread rapidly.
   3 – Moderately invasive. Locally dominant.
   4 – Competitive once established.
   5 – Potentially Invasive.

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5.18 Naturalization

5.18.1 Criteria

Naturalized areas are encouraged within all parks and open spaces.

Naturalization may be in the form of a low maintenance planting area, a buffer area for adjacent woodlots or stream corridors, or a landscaped area in association with a site's stormwater design.

The locations and design of these naturalization areas are to be coordinated with the SWM Plan, the site's programming needs, and with consideration for any abutting natural areas or woodlots.

Naturalized areas will consist of either open meadows of native herbaceous plants (grasses, forbs, and wild flowers) or of native woody plant material (shrubs, vines, and trees).

Standard maintenance activities in naturalized areas are to be limited to the removal of invasive non-native species, and a 1.0 m wide mowed strip adjacent to all trails and pathways abutting the naturalized area.

The Town and Conservation Authority (as applicable) must approve the selection of all plant material for naturalized areas. All plant species are to be appropriate to the site.

The use of native, non-invasive species indigenous to the region may be a requirement.

The Town and the Conservation Authority will provide specific direction regarding SWMP planting, species selection, and submission requirements. Refer to Section 5.17 (Planting) for recommendations.

5.18.2 Design

The Town encourages the preservation of existing vegetation within park blocks, regardless of classification. To preserve this vegetation, a naturalized planting area may be required. Naturalization may also be required for park areas that abut greenland systems and watercourses, regardless of park classification.

Newly naturalized areas shall incorporate the following:

- Use of plant associations which are commonly found in the area.
- Clustering of plants to replicate natural communities.

5.18.3 Environmental Brochure – "Protect Our Green Spaces"

Through the Subdivision Agreement, the Town requires Developers to provide new home buyers with an 'Environmental Brochure.' This brochure is aimed at educating the public about naturalized areas such as woodlots, open space areas, and parks that abut their properties. The brochure is to be provided upon purchase and sale of new homes and prior to granting Assumption of the subdivision. Further inquiries regarding this brochure should be directed to the Town's Forestry & Horticulture division.

5.19 Standard Certification Letters

5.19.1 Base Condition – Stormwater Management

[Company Letterhead]

[Date]

The Corporation of the Town of Milton
Community Services
150 Mary Street
Milton ON L9T 6Z5

Attention: [Name], Director, Facilities, Operations, and Environment

Subject: [Name of Client/Developer]
Park/Open Space Block [No.], 20M-[xxxx]
[Subdivision Name] (24T-[xxxxx]/M)
Base Condition Stormwater Management Certification

1. The base condition design for Park/Open Space Block [No.] is in conformity with the engineering drawings developed by our firm and granted Final Acceptance by the Director, Development Engineering, Town of Milton, on [date].

2. The following criteria have been met as per the Town of the Milton Engineering and Parks Standards Manual:

    a. The runoff coefficient for the park/open space block is adequate to meet the Town's Parks/Open Space Concept Plan for the block.
    b. Adequate capacity exists within the subdivision storm sewer system and within a stormwater management pond as per the approved drawings and associated engineering studies for the subdivision.
    c. The park block and its potential impacts have been included in all stormwater calculations for the subdivision and will meet the Town standards.

3. Any further specific information required by Community Services and/or Development Engineering to ensure that the park block achieves site plan approval for further development will be provided in a timely manner by our firm, upon the Town's request.

Sincerely,

[Signature of Engineer] [PEO stamp, dated and signed]

5.19.2 Base Condition - Traffic

[Company Letterhead]

[Date]

The Corporation of the Town of Milton
Community Services
150 Mary Street
Milton ON L9T 6Z5

Attention: [Name], Director, Facilities, Operations, and Environment

Subject: [Name of Client\Developer]
Park/Open Space Block [No.], 20M-[xxxx]
[Subdivision Name] (24T-[xxxxx]/M)
Certification of Stormwater Management Design

1. Transportation Impact Studies for the subdivision are inclusive of the potential impacts of Park/Open Space Block [No.] in the Town's proposed Parks/Open Space Concept Plan and anticipated developed state.

2. All works performed to meet the requirements of the Transportation Impact Studies for Park/Open Space Block [No.] have met all Town standards excluding future access points to parks.

Sincerely,

[Signature of Engineer] [PEO stamp, dated and signed]

5.19.3 Park/Open Space Stormwater Management Design

[Company Letterhead]

[Date]

The Corporation of the Town of Milton
Community Services
150 Mary Street
Milton ON L9T 6Z5

Attention: [Name], Director, Facilities, Operations, and Environment

Subject: [Name of Client\Developer]
Park/Open Space Block [No.], 20M-[xxxx]
[Subdivision Name] (24T-[xxxxx]/M)
Certification of Stormwater Management Design

This letter is to certify that a runoff coefficient of [C Value] has been applied to Park/Open Space Block [No.] over an area of [# ha] and that the storm sewer within [Subdivision Name] has sufficient capacity to accept this drainage in both its base and final grading conditions, based on a use of [Type of Park].

Sincerely,

[Signature of Engineer] [PEO stamp, dated and signed]