City of Thorold

Site Plan Review Guidelines

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Introduction

The City of Thorold has prepared the Site Plan Review Guidelines (SPRG) to assist applicants in the Site Plan review and approval process. The SPRG contains information on the process and minimum requirements needed to accept and finalize a Site Plan submission. Applicants who utilize the Guidelines should find the process to be efficient and effective.

Site Plan Control examines the design and technical components of a proposed development to ensure that it will be safe, functional, and compatible with its surroundings.

Development within the City requires Site Plan control. There are some types of development that are exempt from Site Plan Control—these are outlined in the City's Site Plan Control By-law.

The City has both standard and minor Site Plan applications. The majority of developments will be a standard Site Plan application. Examples of a minor Site Plan application would be telecommunication towers and commercial outdoor patios.

The process for standard and minor Site Plan applications is the same with the exception that a minor Site Plan application does not have an executed Site Plan Agreement.

Site Plan Control does not only apply to new development projects. It may also apply to building renovations, additions or changes to the use of a building.

How to Use the Site Plan Review Guidelines (SPRG)

These Guidelines will be used by City staff and applicant throughout the process and will:

- Identify the key steps of the Site Plan process;
- Identify the basic requirements for submission;
- Establish technical guidelines (submission materials and drawing checklists) for Site Plan materials; and,
- Provide a framework for the evaluation of the submission.

For current information, or to answer any additional questions you might have, please contact City Planning staff.

Legislative Authority

Site Plan Control is a development approval process administered through Section 41 of the *Planning Act*. In addition, the *Act* outlines requirements and processes for Site Plan Control that should be consulted in addition to these guidelines.

Site Plan Review and Approval Process

In order to ensure effective communication during the process City Planning staff will co-ordinate all review work and obtain the required comments by others including City staff (i.e. those representing the engineering, building, and fire departments) and outside Agencies (i.e. Niagara Region, Niagara Peninsula Conservation Authority, MTO, Enbridge, Cogeco, Bell, Hydro One, etc.).

The steps and times listed below are dependent on drawings and studies being received in a timely manner that are consistent with the SPRG and subsequent submissions that comprehensively address all comments provided. To ensure a quick process, please deliver all material required to the City Planner working on your file for timely turn-around of comments and to finalize the Site Plan Agreement in an accelerated manner.

Please note, minor Site Plan applications follow Steps 1 - 6 only.

	Step	Who	What	Time (approx.)
1	Pre-Consultation Meeting (mandatory)	Applicant	- Submit Pre-Consultation Meeting Form and preliminary Site Plan.	Approx. ½ hour in length Occur every 2 weeks
		City Depts. Agencies	- Identify submission requirements and provide feedback at Meeting.	
		Planner	- Provides Pre-Consultation Meeting Notes.	
2	Site Plan Application Submitted	Applicant	- Provide all material outlined in the Pre-Consultation Meeting Notes. - Ensure that all checklist requirements provided in the SPRG are met. - Ensure all drawings are coordinated. - Provide fee(s).	

3	Application Review	Planner	- Review and deem application complete. If not, notice will be given to the Applicant. - If complete, will circulate to City Departments & Agencies for review.	20 calendar days, if complete
		Planner City Depts. Agencies	- Review and comments Prepared.	
		Planner	- Once circulation period is over, a consolidated list of comments is provided to the Applicant.	
4	Re-submission of Drawings/Studies	Applicant	- Submit revised drawings/studies. - Provide response to consolidated list of comments.	Varies
		Planner	- Circulates to relevant City Departments & agencies. - A consolidated list of comments is provided to the Applicant.	20 calendar days
		Planner	- Will notify Applicant when all comments have been addressed.	1 day
5	Approval of Drawings/Studies by City & Agencies	Applicant	- Provides Planner with final paper set of drawings (and studies, if applicable). - All lot consolidation must be finalized (if applicable). - Any road widening must be conveyed (i.e. to City or Niagara Region) prior to the execution of the agreement. - Provides Planner with current Parcel Register and cost estimates.	Varies
6	Approval by Director of Planning and Development Services	Planner	- Prepares report and provides drawings and studies for Director's approval.	1 week
		Director	- Signs report, drawings, and studies.	1 week

7	Preparation of Site Plan Agreement	Planner	- Prepares agreement and circulates for City staff and Niagara Region, if applicable, review. - Once draft is finalized, provides to Applicant for review.	3 weeks
8	Execution of Agreement & Provision of Security	Applicant	- Applicant signs agreement. - Mortgagees sign agreement (if any). - Applicant provides agreement and required security to Planner.	Varies
		Planner	- Deposits required security with Finance department.	1 week
9	By-law Approval	Planner Council Mayor Clerk	- Presents By-law for Council approval. - Provides Agreement to Mayor and Clerk for execution.	1 week
10	Registration of Agreement	Planner	- Sends executed agreement to City's lawyer for registration. - Once registered, a copy is provided to Applicant and to the Building and Finance Departments. - A Building Permit may now be issued.	1 week
11	Security Release Upon Completion of Works	Applicant	- Notifies Planner works complete and requests security release. - Note: Subject to Site Plan Agreement. - Note: Requires satisfactory completion of Works (as per approved drawings).	Varies
		Planner	- Reviews works completed with other departments and agencies. - Receives comments from other departments and agencies. - Ensures all primary and secondary services are finalized.	2 weeks

			- Ensures buildings and structures completed as per approved drawings.	
12	Release of Security	Planner	- Prepares Internal Memo to Finance Department to Release Security.	3 weeks
		Finance Dept.	- Security Released.	

Other Approvals

Prior to a Site Plan being able to be finalized, there may need to be other approvals received. For instance:

- Declaration of a Zoning-By-law Amendment.
- Declaration of a Minor Variance(s).
- Final Completion of a Consent/Severance.
- Amendment/Repeal of a By-law passed under the *Ontario Heritage Act*.

Complete Site Plan Application Submission

A standard Site Plan submission includes the following information:

Plan	Paper Copies
Site Plan (folded) with pdf.	4
Building Elevations (folded) with pdf.	2
Grading Plan (folded) with pdf.	2
Servicing Plan (folded) with pdf.	3
Landscape Plan (folded) with pdf.	2
Photometric Plan (folded) with pdf. ** Only if exterior lighting proposed.	2
Engineering studies, for example: - Functional Servicing Report with pdf. - Stormwater Management Report with pdf.	3
Fire studies: - Engineering Details and Drawings for On-Site Water Supply for Firefighting (private system) with pdf.	3
Zoning By-law Matrix with pdf.	2
OBC Matrix with pdf.	2
Parcel Register	1
Cost Estimates of Site Works	1

A minor Site Plan submission includes the following information:

Plan	Paper Copies
Site Plan (folded) with pdf.	4
Building or Structure Elevations (folded) with pdf.	2
Grading Plan (folded) with pdf. *May be provided on Site Plan.	2
Servicing Plan (folded) with pdf. *Only if applicable.	3
Zoning By-law Matrix with pdf.	2
OBC Matrix with pdf.	2
Fire studies: - Engineering Details and Drawings for On-Site Water Supply for Firefighting (private system) with pdf. Only If applicable.	

Please note that if the site is located on a Regional Road or there is Regional interest an additional copy of each drawing and study is required.

All drawings must be in metric scale, full plan size, be fully coordinated, and include the notation comments provided in the appropriate Checklists and Notations section.

Un-coordinated drawings will cause delay in the process, as amended drawings will be required.

The City and Agencies may require additional drawings and studies not outlined above that will be identified at the Pre-Consultation Meeting.

Please refer to the Pre-Consultation Meeting Notes, sent after the meeting, to confirm that all material required is included in the submission package.

Site Plan Review Fees

All Site Plan fees are set annually by the City, Niagara Region, and Niagara Peninsula Conservation Authority and may be found on their websites.

It is the responsibility of the Applicant to confirm and provide the correct fee(s) when making Site Plan submission to the City.

Separate cheques are required for the City, Niagara Region, and the Niagara Peninsula Conservation Authority. The City forwards Agency fees as part of the circulation package.

Applicants are responsible for any Agency review fees.

Following Site Plan, and the provision of securities, additional fees will be required as part of a Building Permit application.

Performance Securities

The *Planning Act* permits the City to require the posting of securities that are held for the completion of the site's works as detailed in the approved drawings and specifications.

Securities may be released in accordance with the terms and timelines outlined in the Site Plan Agreement.

If work is not completed in accordance with the approved drawings within the required timelines established by the Site Plan Agreement, the City reserves the right to cash and utilize the securities to complete the works as required.

Securities are determined from the cost estimates provided by the Applicant and may be provided in the form of cash, cheque (made out to the City of Thorold), or letter of credit. An example of a letter of credit is provided in Appendix 4.

Federal, Provincial and City Government developments are exempt from the provision of securities.

Site Plan Agreements and Conditions

A Site Plan Agreement will be required for new development projects. The City may also require modifications to an existing Site Plan Agreement for any changes to approved site plan drawings (i.e. building addition).

A Site Plan Agreement will not be required for minor Site Plan applications—such as telecommunication towers and commercial outdoor patios.

The City has a standard Site Plan Agreement but additional conditions may be added by the City or by Agencies.

Prior to the Site Plan Agreement being able to be executed, the Applicant is responsible for:

- Providing one (1) final paper copy of all drawings and studies to the Planner.
- Confirming the legal description, owner(s), and mortgagee(s) information to the Planner.
- With multiple properties, having consolidated the lot—while PINs are not required to be consolidated, the Applicant may consider doing so.
- Conveying all necessary easements or land dedications to the appropriate authority, such as municipal road widenings.

Site Plan Standards, Checklists, and Notations

The Site Plan Standards, Checklists, and Notations section has been prepared to identify minimum Site Plan drawing submission requirements that will be accepted by the City. Applicants are responsible to review this section and incorporate the requirements into the drawing submissions.

General Checklist

- All drawings must be in full and legible metric scale (generally not greater than 1:500).
- All text and details in drawings must be fully readable/legible with appropriately scaled font size and line work.
- All drawings must be prepared by an accredited professional.
- All drawings must be fully coordinated. Basic information, such as building footprints and site features, must be coordinated on all plans.
- All drawings must indicate the municipal address and legal description of the subject property.
- All drawings must indicate the drawing name and number.
- All drawings must include a date of production and a schedule of revisions.
- All drawings must include a north arrow.
- All drawings must include the owner's information (name, address, phone number).
- All drawings must include the consultant's information (name, address, phone number) and signed stamp, as appropriate.

Site Plan Drawing Checklist and Notations

All site plan drawings should include, but not be limited to, the following information:

✓	**Basic Information**
	Location inset map depicting subject property, adjacent properties, and streets.
	Clearly identifiable property boundary—excluding road widening conveyance—based on an OLS survey.
	All bearings and dimensions of the subject property—based on an OLS survey.
	If required, any road widening conveyance—based on an OLS survey.
	Sight triangles as per the City's Zoning By-law requirements and Regional requirements (for properties adjacent to a Regional road).
	Easements and/or right-of-ways and/or 0.3 m reserves.
	Abutting streets identified and labeled.
	Items which may impact vehicle access onto the site, such as: traffic signals, turning lanes, centre medians, etc.
	Basic information on adjacent properties, such as: building locations, driveway entrances, etc.
	All municipal right-of-way utilities including sidewalks, hydro poles, electrical transmission boxes, Bell boxes, fire hydrants, transit stations, hydro and gas lines, etc.
	All municipal right-of-way boulevard trees and planting locations.
	Existing Natural Heritage Features (i.e. woodlot, wetland, streams) on the subject property and on adjacent properties.
	Zoning setback lines, include required setbacks and planting/buffer strips.
	Location and dimensions of all existing and proposed buildings.
	Dimensions of all existing and proposed buildings to each other and to lot lines.
	Building entrance, fire routes and emergency access locations.
	Driveway, parking and loading areas with line painting, surface type, and dimensions indicated. Required dimensions are outlined in the City's Zoning By-law.

	Parking and loading areas should generally be located behind or beside the building to allow the building to be located closer to the public street. Front yard parking should be limited to a single or double loaded aisle where possible.
	Parking aisles should be generally orientated towards building entrances and sidewalks to assist pedestrian routes.
	A large parking area should be divided into smaller sections by the use of curbed landscaped islands (that are at least 2.5 m wide to sustain tree plantings).
	Parking lots adjacent to public streets should be screened with plantings that are salt tolerant. Parking lots adjacent to residential uses should have a planting/buffer strip consisting of tall plantings and fencing even if not required by the City's Zoning By-law.
	Loading areas that are visible from a public street or that are adjacent to a residential use should be screened with plantings and/or fencing.
	Loading areas should be designed so that when in use they do not block access to parking areas.
	The on-site circulation for trucks should not disrupt other vehicular and pedestrian movements. Encourage forward motion loading and access movements for trucks. Minimize reverse turning movements on site, onto public streets, and steep grades.
	Provide vehicle and truck turning radii to demonstrate adequate circulation and turning movement throughout the parking area. Design landscape islands and parking aisles to accommodate vehicular traffic flow.
	The number of driveway connections to a public street should be minimized. Mutual or shared driveways are encouraged especially along collector and arterial roads. Driveways should be coordinated for ease of traffic movement.
	It is preferable for a two-way driveway access for all development; however, where access onto the site is a one-way driveway a lay-by must be provided to allow vehicles to queue. Traffic signage (i.e. one-way and fire route signs) is required.
	Indicate driveways that will be abandoned. Curb is to be reinstated and area is to be landscaped appropriately.
	Outdoor bicycle parking should be clustered near building entrances and distributed across large sites in locations that avoid conflicts with pedestrian movement, are well lit, and hard surfaced. The City encourages sheltered bicycle storage areas.
	The location and size of accessible parking spaces as outlined in the City's Zoning By-law. Accessible parking spaces are included in the total required parking needs for the site.

	Designated accessible parking spaces should be located within close proximity to building entrance points.
	Avoid placing large planters, garbage receptacles, benches, snow storage areas, or delivery locations in locations that may interfere with a path of travel or entrance.
	Location of accessible ramps and railings on both sides (with gradients between 1:20 and 1.12). Where a ramp exceeds 9 m in length, and where there is an abrupt change in direction, there should be a level rest area measuring at least 1.67 m by 1.67 m. *Please confirm Ontario Building Code requirements for your project. Where there is discrepancy, the Ontario Building Code prevails.*
	Designated accessible aisles are adjacent to designated accessible parking spaces and adjoining sidewalks should have curb cuts with tactile warning strips.
	Drive-through facilities should be located behind or along the sides of the building. Where a drive-through facility must be located adjacent to a public street it must be screened by a planting strip. Adjacent to residential uses, a planting strip along with fencing is required.
	The main building entrance for a building that has a drive-through should be located as far as possible from the order/pick-up window. Pedestrians should be able to enter the main door of the building from the parking area without crossing the drive-through stacking lane.
	Drive-through stacking lanes should be separated from other areas by raised landscape islands, planting strips or fencing. Directional signage should indicate location and circulation of the stacking lane route.
	Location and surface treatment of designated fire access route with dimensions provided, indicating: • Must have a clear width of 6 m at all times and be connected to a public street. It must be located not less than 3 m and not more than 15 m (measured horizontally) from each face of the building required to face a street. • Direct fire access may be provided if the primary building entrance is located within 15 m of the street curb line. • The minimum centre-line turning radius is 12 m. • The minimum overhead clearance is 5 m. • A change of grade not more than 1 in 12.5 m over a minimum distance of 15 m. • Have turnaround facilities dead end portions of an access route are more than 90 m long and be connected to a public thoroughfare.

	• Be designed to support the expected loads imposed by fire-fighting equipment and be surfaced with asphalt or other material designed to permit accessibility under all climatic conditions. *Please confirm Ontario Building Code requirements for your project. Where there is discrepancy, the Ontario Building Code prevails.*
	Secondary emergency access is required when a building is located more than 90 m away from a public street. *Please confirm Ontario Building Code requirements for your project. Where there is discrepancy, the Ontario Building Code prevails.*
	Locations of fire hydrants, indicating: • Location within 90 m horizontally of any portion of a building, which is required to face a public street. • Be positioned not closer than 12 m to any building face where possible. • Be installed in compliance with City of Thorold requirements. • Be located in an area unobstructed by landscaping. • Upon completion of the project, the installing contractor shall certify in writing to Fire Prevention that the hydrant(s) have been tested and left fully operational. *Please confirm Ontario Building Code requirements for your project. Where there is discrepancy, the Ontario Building Code prevails.*
	Location of standpipe and sprinkler siamese connections, indicating: • Placement in accordance with the Ontario Building Code. • Location within 45 m of a fire hydrant. • Be located and accessed adjacent to a public street or fire access route. • Be located in an area unobstructed by landscaping. *Please confirm Ontario Building Code requirements for your project. Where there is discrepancy, the Ontario Building Code prevails.*
	Location of private on-site water supply for fire-fighting purposes (if required).
	Signage locations: accessible parking, fire access route, one-way signs (if needed), stop signs (if needed), with child (if needed), seniors parking (if needed), visitors parking (if needed), etc. Provide signage examples.
	All site utilities such as hydro poles, hydro vaults, transformers, Bell boxes.

	Provide surface treatment and width dimension for sidewalks. Internal sidewalks must be a minimum 1.5 m but may be greater (i.e. a minimum of 2.5 - 3 m) to accommodate benches, outdoor display/retail areas, etc.
	Connect buildings on the site to any pedestrian walkways, transit stops, parking areas (vehicle and bike), trails, or other destinations (e.g. playgrounds) on or off-site.
	Where a transit stop is located within a walking distance of the site, the building main entrance should have a direct pedestrian walkway to that transit stop.
	Curbing should be provided: at driveway access from public streets; around landscaped traffic islands within a parking area; for pedestrian walkways with curb cuts (i.e. adjacent to driveways or parking areas); and, between a parking area and a landscaped area.
	Areas where pedestrian walkways cross vehicular lanes should be identified (i.e. by signage, bollards, different paving materials or hatched crosswalk markings) to improve visibility and pedestrian safety.
	Existing and/or proposed: drainage swales, catch basins, stormwater management ponds, sanitary manholes or private septic system location (including reserve septic location area), private cistern/well location, etc.
	Landscape areas (show areas only).
	Existing and/or proposed trees (show locations & size only).
	All fence and retaining wall locations. All fence and retaining walls are subject to the City's Fence By-law regulations. Fencing should not be located in sight triangles. The good side of fencing should face public streets or surrounding properties. Design fencing to accommodate or withstand snow storage compaction (i.e. 6" x 6" posts). Select a fence style that complements and improves streetscape quality and character.
	Noise attenuation fencing may be required for noise mitigation purposes particularly for loading areas located adjacent to residential properties. Provide high quality, durable fence treatment. Stone or masonry fencing is preferred.
	Location and screening of outdoor garbage and recycling facilities. A minimum 1.8 m high opaque permanent heavy-duty fence or wall is required to screen above-grade facilities. Landscaping can soften the appearance of walls. Protective bollards should be installed at corners of outdoor garbage and recycling facilities where it abuts vehicular traffic areas.
	Waste collection truck access to outdoor garbage and recycling facilities should be designed so that the truck movements will not disrupt vehicular and pedestrian

	access or parking areas. Trucks are not to reverse or maneuvering onto public streets. For Garbage Truck Movements: • Provide minimum centre line turning radius of 12 m. • Access driveways must be a minimum of 6.1 m wide at the point of ingress or egress and turning movements, and a minimum of 4.5 m throughout the site. • Provide minimum vertical clearance of 4.4 m along route. • Design access with heavy-duty asphalt. • Hammerheads or cul-de-sacs must be provided if internal route is not continuous. For properties serviced by Niagara Region Waste and Recycling Collection the route and truck movement radius must conform to the Regional Waste Collection Policy.
	Location and screening of outside storage.
	Centralized mailbox location (if needed).
	Snow storage area(s) should be located adjacent to parking areas and away from catch basins. They should not interfere with pedestrian or vehicular circulation, sensitive landscape plantings, or create visual obstacles for pedestrian and/or vehicular movement.
	Building pole signage location (if any). All signage shall conform to the City's Sign By-law.
	Municipal address should be clearly visible from the public street on either a pole sign, municipal issued address sign, or on the façade of the building facing the public street.
	Outdoor light fixtures on site.
	If development is to be phased, phasing locations clearly identified.
	Site Plan is to be prepared and stamped by a licensed Surveyor, registered Professional Planner, or qualified Professional Engineer.

Site Plan drawing notations:

- The property Owner is responsible for any replace or repair costs to the municipal roadway or infrastructure to City standards.
- All snow storage shall be stored on site. Surplus snow storage shall be removed off-site at the Owner's expense by a private removal service.

Building Elevations Checklist and Notations

All building elevation drawings should include, but not be limited to, the following information:

✓	**Basic Information**
	Buildings should be designed and situated in a manner to help frame the street edge (or intersection when located on a corner lot) with main entrances facing the public street.
	Provide materials, architectural elements, and features that complement the surrounding neighbourhood and enhance the streetscape character.
	When appropriate, ensure that the elevations conform to applicable Urban Design Guidelines/Downtown Design Guidelines/Heritage Impact Assessments.
	Elevation drawings for each building elevation (label: north, south, east, and west).
	Detailed drawings showing building massing and design elements including all architectural features, materials, glazed areas, and colours (labeled clearly on the drawing or in a legend).
	Label building height and each level/storey height and indicate first storey (in metres).
	Show location (and design, if known) of municipal street address. Street address signs should be located within 2 m of the primary building entrance(s) and must be visible from the street.
	If the subject property has multiple buildings and/or units show the location (and design, if known) of building and/or unit identifiers.
	Air conditioners, utility metres, etc. are preferred to be located in the interior side or rear yard. They should not be located in the front yard—if they are, they should be shielded architecturally (i.e. walls, insets) or by landscaping. Confirm with individual Utilities their technical requirements.
	Location of rooftop mechanical equipment and screening features(s).
	Location of any at grade mechanical equipment.
	Location of any rooftop access ladders and illustrate cover to prevent unwanted rooftop access.
	Location of mounted exterior lighting. It is recommended that exterior lighting be provided at all doorways for safety and security.

	Drawing(s) to be prepared and stamped by Professional Architect or qualified Professional Engineer or Registered Designer as required by the Ontario Building Code.

Elevation drawing notations:

- The approved building elevations shall form the basis for the Building Permit Application.
- Any substantive change(s) or modifications(s) to the approved Site Plan building elevations(s) shall require a modification to the approved building elevation drawings and approval.
- All rooftop mechanical equipment shall be fully screened from public view at grade and from surrounding residential properties.
- Building colours may be subject to minor adjustments in tone and/or shade.
- Any proposed signage is for illustrative purpose(s) and is subject to the City's Sign By-law.

Landscape Plan Checklist and Notations

All landscape plan drawings should include, but not be limited to, the following information:

✓	**Basic Information**
	Clearly identifiable property boundary—excluding road widening conveyance—based on an OLS survey.
	All bearings and dimensions of the subject property—based on an OLS survey.
	If required, any road widening conveyance—based on an OLS survey.
	Sight triangles as per the City's Zoning By-law requirements and Regional requirements (for properties adjacent to a Regional road).
	Easements and/or right-of-ways and/or 0.3 m reserves.
	Abutting streets identified and labeled.
	Location of buildings, building entrances, and overhangs.
	Location of outdoor light fixtures on site.
	Consider elevation changes of the subject property.
	Provide location of above-ground services.

<table>
<tr><td></td><td>Landscaping meets applicable Zoning By-law requirements (i.e. landscape open space and planting/buffer strip). Provide dimension of planting/buffer strip.</td></tr>
<tr><td></td><td>Landscaping should take into account and provide appropriate planting to complement and appropriately buffer adjacent properties.</td></tr>
<tr><td></td><td>When appropriate, ensure that the landscape drawing conforms to applicable Urban Design Guidelines, Downtown Design Guidelines and/or the approved Subdivision Landscape Plan.</td></tr>
<tr><td></td><td>Provide in the Landscape Plant List: plant species (common and botanical) name, quantity, size (i.e. height and caliper), and, general remarks.</td></tr>
<tr><td></td><td>Planting meets the following standards:
<table>
<tr><th></th><th>Minimum Size</th></tr>
<tr><td>Deciduous Trees</td><td>60 mm caliper</td></tr>
<tr><td>Coniferous Trees</td><td>180 cm in height</td></tr>
<tr><td>Deciduous Shrubs</td><td>60 cm in height,
2-3 gallon pot size</td></tr>
<tr><td>Coniferous Shrubs</td><td>40 cm spread (spreading habit); or 80 cm in height, 2-3 gallon pot size</td></tr>
<tr><td>Flowering Trees</td><td>50 mm caliper</td></tr>
</table></td></tr>
<tr><td></td><td>Location and identification of all plant materials. Coordinate species and quantities with the Landscape Plant List.</td></tr>
<tr><td></td><td>Proposed plant material should include native, non-invasive, low maintenance species.</td></tr>
<tr><td></td><td>Minimum Spacing of Row Plantings- depending of desired effect:
<table>
<tr><th></th><th>Spacing Standards</th></tr>
<tr><td>Deciduous Trees</td><td>6 m - 10 m, average of 7.5 m on centre interval spacing</td></tr>
<tr><td>Coniferous Trees</td><td>4 m - 8 m</td></tr>
<tr><td>Shrubs</td><td>Grouped together- 1 m minimum on centre intervals</td></tr>
<tr><td>Flowering Trees</td><td>5 m - 7 m</td></tr>
</table></td></tr>
</table>

	Provide landscape areas adjacent to building. Provide planting beds along the public street. Include a variety of trees, shrubs, and perennials to provide four season visual interest to the site.
	Planting beds should be a minimum 1.5 m in width, have a minimum 450 mm topsoil depth for healthy plant growing conditions, and be mulched of shredded bark to a minimum depth of 70 mm.
	All seeded and sodded areas should have a minimum of 150 mm of topsoil.
	Portions of the subject property that is reserved for expansion and is otherwise unused should be seeded and maintained as lawn.
	All boulevards, if disturbed or altered, are to be restored with 150 mm minimum of topsoil and sod to the satisfaction of the City and/or Niagara Region.
	Landscape features should be located to improve energy conservation (i.e. wind screening, shading).
	Proposed plant material should not obstruct sight line views in sight triangles, parking lots, driveways, or entrances to buildings. Consideration should be given to plantings that will aid in minimizing vehicular headlight glare.
	Landscaping should take into account providing appropriate screening (i.e. plantings and/or fencing) for privacy areas for ground-level apartment or townhouse units.
	Landscaping should take into account screening loading, utility/service facilities (where appropriate), and garbage and recycling facilities.
	Illustrate existing trees and shrubs located on the subject property that will be retained and on abutting properties.
	Show drip lines for all existing trees to be retained and identify measures to be utilized for protection, if outlined in a Tree Preservation Plan.
	Planting/buffer strips are to be planted with trees or tall shrubs (that have a minimum height of 1.2 m at planting and grow to be a minimum of 3 m in height). They may also include smaller shrub species and perennials/grasses in front of taller species for variety. Ensure that trees planted will not interfere with existing trees on adjacent properties.
	Paved or other surface treatment areas, excluding pedestrian walkways and driveways, are not permitted in the planting/buffer strip.
	Plantings, other than sod, small shrubs, and perennials/grasses are not to be located within easements or right-of-ways.
	Plantings taller than 0.6 m are not to be planted within a sight triangle.

<table>
<tr><td></td><td>Any plantings on or adjacent to stormwater management features (including swales and ponds) should be non-invasive, native species, etc.</td></tr>
<tr><td></td><td>Trees will be required when there are not existing street trees and must not be planted directly on property lines. Trees planted on a City or Niagara Region right-of-way must be selected from the municipality’s list of preferred Species for Street Trees.</td></tr>
<tr><td></td><td>Trees should not interfere with the safety or operation of utilities, and may generally follow these guidelines (dependent on design and species):

<table>
<tr><th>Utility</th><th>Minimum Distance Separation</th></tr>
<tr><td>Fire Hydrant</td><td>1.0 m</td></tr>
<tr><td>Hydro Vault or Transformer</td><td>1.2 m from sides; 3.0 m from door</td></tr>
<tr><td>Light Standard</td><td>4.5 m</td></tr>
<tr><td>Bell/Cable Pedestals</td><td>1.0 m</td></tr>
<tr><td>Buried Lines</td><td>1.0 m</td></tr>
<tr><td>Edge of Driveway (Residential)</td><td>1.5 m</td></tr>
<tr><td>Stop Signs</td><td>10.0 m</td></tr>
</table>
Sight lines, the location of underground and above-ground utilities, driveway locations, and traffic control signs, may require alterations to locations. Prior to excavation, all underground utilities are to be located and tree locations will need to be adjusted, as necessary, to suit as-built conditions.</td></tr>
<tr><td></td><td>Show all pedestrian walkways with dimensions. Identify surface material and colour (if applied).</td></tr>
<tr><td></td><td>Show all amenity areas (i.e. patios, play areas, etc.) and/or entrance features with dimensions. Provide details of site furnishings.</td></tr>
<tr><td></td><td>Location and details of retaining walls (those in excess of 1.0 m must be accompanied by an Engineer’s stamp) and berms (preferably not along the frontage of a property- if needed, to a maximum 4:1 slope).</td></tr>
<tr><td></td><td>Location and details of all fencing. Fences abutting City property should be located within 0.3 m within the property line on the subject property.</td></tr>
</table>

	The finished side should face public streets or abutting properties. Upgraded fence designs (i.e. decorative iron fencing, masonry pillars or upgraded wood detailing) may be utilized.
	Landscape islands should break up the monotony of large parking areas (i.e. paved surfaces, define pedestrian and vehicle routes, and screen parked cars). Landscape island beds should be a minimum of 2.5 m in width, be mulched, and contain drought-resistant trees and/or shrubs at heights that will not obscure driver sight lines.
	If there will be irrigation, indicate the irrigation layout and details.
	Planting details for coniferous and deciduous trees and shrubs.
	When appropriate, provide a Tree Preservation Plan and Details (including trees located adjacent to subject property, if required).
	All landscape drawings must be prepared and stamped by a Landscape Architect. The City may consider Plans prepared by a Landscape Designer (i.e. for small additions or renovation projects or projects outside of the Urban Settlement Boundary).

Landscape Plan drawing notations:

General

- Prior to excavating, the contractor shall verify the location of all underground utilities. In the event of a conflict between a proposed tree location and an underground service, the exact location of plantings shall be determined on site by the Landscape Architect. The contractor shall, at their own expense, repair any damage to existing utilities, structures, facilities, etc. done in the performance of their work.

Landscaping Plant Materials

- All plants shall be installed true to specified names, sizes, etc. and shall conform to the standards of the Canadian Nursery Landscapes Association.
- All plants shall be nursery grown in a hardiness zone appropriate to site conditions as published by Agriculture Canada “Map of Plant Hardiness Zones in Canada”.
- In the event of a discrepancy in plant quantity between the Landscape Plan and the Plant List, the Landscape Plan shall govern.
- The contractor shall make plants available for inspection by the Landscape Architect prior to shipping to the site. This does not limit the right of the Landscape Architect or City staff to later reject plant material that is of poor quality, damaged during shipping or installation, performing poorly while the guarantee period is still in effect, or otherwise does not conform to the specifications.

- Plant substitutions must be approved by the Landscape Architect and the City prior to delivery of the material on-site. The Landscape Architect may, upon completion of the work and notwithstanding prior approval at source, reject plant material not conforming to the specifications.
- The contractor shall use standard industry methods for planting trees. Trees shall be turned to give the best appearance. They shall be guyed and staked immediately after planting and as detailed on the drawings.
- The property Owner is responsible to implement the approved Landscape Plan and Tree Preservation Plans. The Owner is financially responsible for all replacement costs for a two-year warranty period.
- Tree Preservation Plan recommendations should be included as notations on Landscape Plan drawings (if required).

Bed Preparation

- Prior to backfilling, scarify the sides and bottom of the excavated tree pits and shrub beds.
- Where heavy clay soil conditions prevail, backfill to the specified depths with 2 parts “Triple Mix” delivered to the site well-mixed with 1 part local topsoil (topsoil that was removed from the site and stockpiled; if unavailable, a topsoil with clay content must be imported).
- Tree pits must be constructed with saucers and mulch as detailed.

Maintenance

- Maintenance of all landscape installations throughout to include:
    - Proper irrigation to ensure optimum growth and development of installed plant material.
    - Cultivation, weeding and fertilization of the tree pits and planting beds.
    - Insect and disease control using Integrated Pest Management practices.
    - Pruning and maintenance to further promote visibility and vitality of its intended use.

Guarantee

- All plant materials shall be guaranteed for a minimum of 1 year from the date of planting. Plants that do not survive satisfactorily during the guarantee period shall be replaced at no extra cost to the Owner. Plant material that is replaced due to unsatisfactory performance shall, in turn, be guaranteed for another minimum of 1 year.
- Similarly, all other landscape work performed under this contract shall be fully guaranteed for the above specified period.
- At the end of the guaranteed period, the contractor shall remove all tree stakes, rodent guards and bark wrap and all extra mulch were necessary.

Continued Responsibility of the Owner

- The Owner has a responsibility to maintain the approved landscape in a well-cared for manner that promotes plant vitality and healthy appearance. Any declining or dead plants are to be replaced within the season to sustain a kept landscape.

Grading Plan Drawing Checklist and Notations

All grading plan drawings should include, but not be limited to, the following information:

✓	**Basic Information**
	Clearly identifiable property boundary—excluding road widening conveyance—based on an OLS survey.
	All bearings and dimensions of the subject property—based on an OLS survey.
	If required, any road widening conveyance—based on an OLS survey.
	Sight triangles as per the City's Zoning By-law requirements and Regional requirements (for properties adjacent to a Regional road).
	Easements and/or right-of-ways and/or 0.3 m reserves.
	Abutting streets identified and labeled.
	Basic information on adjacent properties, such as: building locations, driveway entrances, fences, retaining walls, etc.
	Location of all existing and proposed buildings.
	Basement floor elevations of all buildings to be constructed.
	Location and surface treatment of sidewalks, driveways, and parking areas.
	Location of retaining walls (should be avoided, however, if used any designs in excess of 1 m must be accompanied by an Engineer's stamp), fences, stairs, berms.
	Location of utilities, outdoor light fixtures, and underground services.
	Location of existing surface drainage features such as ditches and channels.
	Location of landscaped areas (show areas only).
	Existing and/or proposed trees (show locations & size only).
	Centre line of road grades at 15 m internals along all adjacent streets.

	Contours (at a maximum of 500 mm internals) to indicate the existing and proposed elevations of the subject property. Contours are to extend a minimum distance of 15 m beyond the subject property to indicate grading and drainage patterns on adjacent properties. Alternatively, geodetic spot elevations may be provided to illustrate existing (light grey text) and proposed (black text) elevations providing the existing elevations were obtained from a field survey on a regular grid pattern with the interval not exceeding 15 m.
	Fill locations identified. Fill is to be clean.
	Temporary stockpile locations identified. Temporary stockpile locations are to have appropriate dust control measures.
	The drainage of the site shall be self-contained and directed away from existing or proposed buildings.
	The grading of the site shall be compatible with drainage from adjacent properties.
	Grade differences at property lines are matched or minimized.
	Surface drainage flow should be depicted with arrows to indicate the direction of flow.
	Details of all stormwater management control features, such as: • Location, size and length of culverts and pipes. • Catchbasins, roof top downspouts, on-site storage, curb cuts and pond outlet controls. • Proposed service connections to City infrastructure including the size and location of storm laterals and service lids, if applicable. • Proposed location and size of the stormwater management pond, if applicable.
	Where a property drains to a stormwater management pond, release rate for rooftops is 42 litres/second/hectare and the overall site is restricted to 180 litres/second/hectare (including rooftop). For those areas not draining to a stormwater management pond, a release rate of 20 litres/second/hectare is required.
	Berms and earth slopes should be no greater than 4:1.
	The grade of sodded or other landscaped areas should have a minimum slope of 2% and a maximum slope of 10%.

	The maximum length of a swale should not exceed 30 m—where greater, a catch basin system is to be installed. The minimum grades of swales are 2 % unless the invert of the swale is of a hard surface.
	The minimum grades on driveways shall be 2% and shall not exceed 8%.
	Provide 3 m easements (i.e. 1.5 m on each property when centred on a joint property line) wherever catch basins will be installed.
	Erosion and sedimentation control measures are to be used during and after construction (i.e. illustrate silt control fencing location that is to be installed prior to site grading and stone mat installed at site entrance).
	Show typical cross sections for all proposed drainage courses and swales.
	Grading Plan to be stamped and signed by a licensed Surveyor or qualified Professional Engineer.

Servicing Plan Drawing Checklist and Notations

All servicing plan drawings should include, but not be limited to, the following information:

✓	**Basic Information**
	Clearly identifiable property boundary—excluding road widening conveyance—based on an OLS survey.
	All bearings and dimensions of the subject property—based on an OLS survey.
	If required, any road widening conveyance—based on an OLS survey.
	Sight triangles as per the City's Zoning By-law requirements and Regional requirements (for properties adjacent to a Regional road).
	Easements and/or right-of-ways and/or 0.3 m reserves.
	Abutting streets identified and labeled.
	Items which may impact vehicle access onto the site, such as: traffic signals, turning lanes, centre medians, etc.
	Basic information on adjacent properties, such as: building locations, driveway entrances, etc.
	All municipal right-of-way utilities including sidewalks, hydro poles, electrical transformers, Bell boxes, fire hydrants, transit stations, hydro and gas lines, etc.

	All site utilities such as hydro poles, hydro vaults, transformers, Bell boxes, hydro and gas lines, etc.
	A minimum of 1.5 m clearance is to be provided from the limits of all sidewalks and driveways to existing utility structures within the municipal right-of-way. If this clearance is not maintained, the structures shall be relocated at the Applicant's expense.
	Utility infrastructure and Niagara Region Traffic Control infrastructure setbacks to be confirmed with the appropriate agency. If clearance is not maintained, the infrastructure shall be relocated at the Applicant's expense.
	Location of all existing and proposed buildings.
	Basement floor elevations of all buildings to be constructed.
	Landscape areas (show areas only).
	Existing and/or proposed trees (show locations & size only).
	Outdoor light fixtures on site.
	Location of all existing underground services on adjacent streets.
	Location, size, grade, and invert elevations of all existing and proposed sanitary sewer connections to the property.
	Location of all sanitary manholes.
	If private septic, the location of the existing or proposed septic system and dimensions to existing or proposed buildings.
	If private septic, the location of the reserved land for septic system replacement (in the event of failure).
	Location, size, grade of all existing storm sewer connections to the property.
	Location of all catch basins.
	Location and size of all existing and proposed watermain, watermain appurtenances, water meter chamber, hydrants and bends (angles labeled) to the property.
	If private water, the location of the well or cistern.
	Location of on-site water supply for fire-fighting purposes with water flow calculations and system designs (if required).
	Location of stormwater management pond, swales, and ditches.

	Location of all sidewalks, driveways, and parking areas.
	Street curbs are to be continuous within the proposed entrance.
	The minimum pavement design for the asphalt driveway apron within the municipal road allowance shall be as follows: 40mm HL3 Asphalt 50mm HL8 Asphalt 150mm Granular 'A' 300mm Granular 'B' The Consultant should review the above with respect to the expected usage.
	Servicing Plan to be prepared and stamped by a qualified Professional Engineer.

Servicing Plan drawing notations:

- Construction for this project to comply with the most current Standards and Specifications of the City, Niagara Region, and Province.
- All proposed construction shall be carried out in accordance with the requirements of the Occupational Health and Safety Act and Regulations for construction projects.
- Within a minimum of forty-eight (48) hours prior to commencing construction within the municipal right-of-way, the Contractor must contact the following:
    - City of Thorold Public Works Department
    - Niagara Region Public Works Department
    - Enbridge Gas
    - Hydro One
    - Bell Canada
    - Rogers Cable
- The property Owner is responsible for any replace or repair costs to the municipal roadway or infrastructure to City standards.
- Permits are required for any work in a City or Regional right-of-way.
- All sewers and watermains including backflow prevention devices shall be designed in accordance with the requirements of the City and the Ontario Building Code.

Photometric Plan Drawing Checklist and Notations

All photometric plan drawings should include, but not be limited to, the following information:

✓	**Basic Information**
	Clearly identifiable property boundary—excluding road widening conveyance—based on an OLS survey.
	All bearings and dimensions of the subject property—based on an OLS survey.
	If required, any road widening conveyance—based on an OLS survey.
	Sight triangles as per the City's Zoning By-law requirements and Regional requirements (for properties adjacent to a Regional road).
	Easements and/or right-of-ways and/or 0.3 m reserves.
	Abutting streets identified and labeled.
	Location of all existing and proposed buildings.
	Location of all sidewalks, driveways, and parking areas.
	Landscape areas (show areas only).
	Existing and/or proposed trees (show locations & size only).
	Provide uniform lighting levels (illumination) across the subject property. Avoid pockets of very high or low levels of illumination. Lighting levels (illumination) are to be appropriate for the development and not excessive For instance, best practice for reducing light pollution is to apply light levels with a typical uniformity ratio of 3:1, where the maximum light level can be 3 times the brightness of the minimum level.
	Increased lighting levels (illumination) may be provided for accessible parking spaces.
	Avoid light spill over onto surrounding municipal right-of-ways or land.
	Adjacent properties should experience minimal glare and have reduced spill light (this may be accomplished by using deflection shields or full cut off light fixtures; and/or by reducing the lumens/foot candle ratings; or by having the poles be the same height or less than building(s) so that a minimum trespass of light results from the subject property's illumination).
	Encourage metal halide or other white light fixtures to improve visibility.

	Consider opportunities for LED lighting/technologies for reduced energy consumption.
	Lighting fixtures should complement the design of the development. Encourage decorative style fixtures that architecturally complement the building design.
	Show and provide details of light fixture(s).
	Provide Luminaire Schedule which includes: lamp type, fixture type, lumens/foot candle rating of lamp, etc.
	Photometric Plan to be prepared and stamped by a qualified Professional Engineer.

Photometric Plan drawing notations:

- All proposed light standards should maintain night time comfort and safe conditions while utilizing full cut off and International Dark Sky Association (IDA) compliant fixtures.
- All proposed light standards shall result in minimal light trespass or glare on neighbouring properties. All reasonable efforts have been made to minimize light trespass or glare on neighbouring properties in the design of this plan by: utilizing deflection shields or full cut off light fixtures; and/or by reducing the lumens/foot candle ratings; or by having the poles be the same height or less than the subject property's building(s).

Appendixes

Appendix 1: Zoning By-law Matrix Template

A complete and full Zoning By-law Matrix must appear on the Site Plan drawing.

Please refer to the City's Zoning By-law for the zoning and regulations applicable to the subject property.

Example:

Zoning of Subject Property:		
Zone Regulation	**Requirement**	**Proposed**
Lot Area (min.)		
Lot Frontage (min.)		
Lot Coverage (min.)		
Front Yard Setback (min.)		
Exterior Side Yard(s) Setback (min)		
Interior Side Yard(s) Setback (min)		
Rear Yard Setback (min.)		
Building Height (max.)		
Landscape Open Area (min.)		
Planting/Buffer Strip Width (min.)		
Planting/Buffer Strip Location		
General Regulations		
Accessory Uses - List All Uses		
Accessory- Lot Coverage (max.)		
Accessory- Side Yard Setback (min.)		
Accessory- Rear Yard Setback (min.)		
Parking & Loading Regulations		
Non-Residential Uses - List All Uses - Provide Unit Area		
Residential Uses - List Type of Unit - Provide Number of Each Unit Type		
Accessible Parking		
Bicycle Parking: - Indoor - Outdoor		
Loading Spaces		

Appendix 2: Ontario Building Code Matrix Template

The Ontario Building Code Data Matrix shall be completed and stamped by a Professional Architect and/or qualified Professional Engineer and appear on the Site Plan drawing.

Firm Name	
Certificate of Practice Number *(Address and contact information)* *(The Certificate of practice number of the holder)*	*Apply seal and signature here*
Name of Project	The architect/engineer noted above has exercised responsible control with respect to design activities
Location (address):	

Item	Ontario Building Code Data				OBC Reference
1.	**Project Description**	**Change of Use:** ☐ Yes ☐ No	☐ New Construction ☐ Addition ☐ Alteration/Renovation		
2.	**Major Occupancy(s):** *(Please Describe)*				
3.	**Building Area:** Existing:_____m New:_____m Total:_____m				
4.	**Gross Area** Existing:_____m New:_____m Total:_____m				
5.	**Number of Storeys:** Above Grade_____ Below Grade_____				
6.	**Height of Building:** _____m				
7.	**Number of Streets:** _____				
8.	**Building Classification:** 3.2.2_____	Group:	Division:		
9.	**Sprinkler System:**	☐ Entire Building ☐ In Lieu of Roof Rating ☐ Basement Only ☐ Not Required			
10.	**Standpipe System:**	☐ Yes	☐ No		
11.	**Fire Alarm**	☐ Yes	☐ No		
12.	**Fire Fighting Water Supply, as Required by 3.2.5.7, is provided by means of:** *(please describe)*				

13.	**High Building per 3.2.6:**	☐ Yes		☐ No						
14.	**Permitted Construction:**	☐ Combustible		☐ Non Combustible		☐ Both				
	Proposed Construction:	☐ Combustible		☐ Non Combustible		☐ Both				
15.	**Mezzanine(s):**	Aggregate Area_____m^2		% of Floor/Suite _____						
16.	**Occupant Load: _____**persons									
	Based on:	☐ m^2/person		☐ Design of Building						
17.	**Barrier Free Design**	☐ Yes	☐ No (explain)							
18	**Spatial Separation – Construction of Exterior Walls**									
	Wall	Area of EBF (m^2)	L.D. (m)	L/H or H/L	Max Permitted % of Openings	Proposed % of Openings	FRR (hrs)	Comb. Constr.	Comb. Constr. w/ Nonc. Cladding	Nonc. Constr. w/ Nonc. Cladding
	North									
	South									
	East									
	West									

Appendix 3: Cost Estimate Template

SECURITY DEPOSITS AND REQUIRED PAYMENTS

	Items	**Estimated Cost**	**Letter of Credit**
Primary Services			
1	Water system		
2	Stormwater management		
3	Sanitary system/Private septic system		
4	Lot grading		
5	Parking area and driveways		
6	Curbs		
	TOTAL		**10% of total = $**
Secondary Services			
1	Landscaping (includes plant material, installation, soil and sod, accent rocks, etc.)		
3	Sidewalk		
4	Line painting		
5	Parking lot signs		
6	Fencing		
7	Garbage and recycling facility		
	TOTAL		**110% of total = $**
	TOTAL		***$**

* Rounded to nearest dollar

Appendix 4: Letter of Credit Template

LETTER OF CREDIT
Date of Issue:
Date of Expiry

Letter of Credit Reference Number	**Lender**
Beneficiary	**Applicant**
The Corporation of the City of Thorold	

We hereby authorize The Corporation of the City of Thorold (the "Beneficiary") to draw on _____(the "Lender") for the account of _____ (the "Applicant"), up to the aggregate amount of $_____CAD, available on demand as follows (accompanied by the original of this Letter of Credit when fully drawn down).

Pursuant to the request of the Applicant, the Lender herby establishes and gives to you an Irrevocable Letter of Credit in your favour in the total amount of $_____CAD which may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you, which demand we shall honour without inquiring whether you have a right as between the Beneficiary and the Applicant to make such a demand, and without recognizing any claim of the Applicant.

Provided, however, that you are to deliver to us at such times as a written demand for payment is made upon us, a certificate confirming that monies drawn pursuant to this Letter of Credit are to be and/or have been expended pursuant to obligation incurred or to be incurred in connection with the agreement between the Applicant and the Beneficiary.

The amount of this Letter of Credit may be reduced from time to time as advised by notice in writing given to us from time to time by you.

It is understood that this obligation is between the Lender and the Beneficiary and any notice referred to in the preceding paragraph shall not be used for any other purpose than herein set forth. It is further understood that the obligation of the undersigned under this Letter of Credit is an obligation to pay money only and that in no circumstance shall the Lender be obliged to perform or cause to perform any work under the said agreement.

Partial drawings are permitted.

This page forms an integral part of our letter of credit # _____ .

This Letter of Credit is subject to the "Uniform Customs and Practice for Documentary Credits (2007 Revision) International Chamber of Commerce Publication No. 600" and engages us for the terms thereof.

Name:
Position:
I have the authority to bind the corporation.

Name:
Position:
I have the authority to bind the corporation.

Appendix 5: Standards for Reports

Reports should be signed and stamped by the qualified professional who authored them.

Archaeological Assessments

An Archaeological Assessment prepared by a licensed Archaeologist may be required to assess the archaeological potential and document artifacts according to Ministry of Tourism and Culture standards.

A Clearance Letter from the Ministry will need to be provided to the City and to Niagara Region.

Environmental Impact Assessment

An Environmental Impact Assessment (EIS) prepared by a qualified professional may be required to assess the proposed development's impact on natural heritage features at the site and on neighbouring lands (if the site falls within the buffer of natural heritage features).

Please contact Niagara Region Environmental Planning staff for the Region's most current EIS Guidelines and to have the work scoped.

Please contact Niagara Peninsula Conservation Authority (NPCA) Planning staff for the most current NPCA Guidelines and to have the work scoped if a regulated feature (i.e. Provincially Significant Wetland, Fish Habitat/Creek) falls within the site or on neighbouring lands (if the site falls within the buffer of the regulated feature).

Environmental Site Assessment

An Environmental Site Assessment (ESA) prepared by a qualified Professional Engineer may be required to access the risk of potential environmental liability at a property associated with current or historical activities at the site and neighbouring lands.

Changes in land use to a more sensitive use will require a Record of Site Condition (RSC) to be provided.

An RSC will be required to be submitted to the City.

Functional Servicing Report

A Functional Servicing Report (FSR) prepared by a qualified Professional Engineer may be required and should address how the proposed development will be serviced (including water, sanitary and storm connection points to existing

municipal infrastructure or private servicing, if applicable). It should address anticipated water requirements and sewage generation rates.

Geotechnical Report

A Geotechnical Report may be required and must be performed by a qualified Professional Engineer to obtain information on the physical properties of soils around a site to design earthworks and foundations for proposed structures.

Noise and Vibration Impact Studies

A Noise and Vibration Impact Study may be required and is to be carried out by a qualified Professional Engineer for developments that are close to a major roadway (i.e. Regional or Provincial road), rail corridor, or industrial uses. This study is to follow Ministry of Environment criteria.

Shadow Study

A Shadow Study may be required by the City to illustrate the shadow impact the proposed development has on the site and surrounding properties with focus on residential uses, outdoor amenity spaces, and open space/parks.

At the discretion of the City, a Shadow Study may be required for development over 6 storeys (18 m) in height. A Shadow Study may be requested for developments of a lower height depending on potential impact to adjacent properties.

Shadow tests are required for the following dates and times:

Date(s)	Times
Spring shadows, March 21 (equinox)	10 am, 12 pm, 2 pm, 4 pm, 6 pm
Summer shadows, June 21 (solstice)	10 am, 12 pm, 2 pm, 4 pm, 6 pm
Autumn shadows, September 21 (equinox)	10 am, 12 pm, 2 pm, 4 pm, 6 pm
Winter shadows, December 21 (solstice)	10 am, 12 pm, 2 pm

These times allow for measuring of hours of sunlight intervals. Additional times may be requested to respond to specific site conditions and shading concerns. The level of impact is measured by the time of shadow, or duration. To be considered complete, a Shadow Study must demonstrate:

- As a principle, at least 50% or more of any property should not be shaded for more than two interval times (a four hour equivalency); or,
- As a principle, at least 50% of any property should be in full sun for at least two interval times (a four hour equivalency).

The Study should include a summary letter describing how the proposed development meets minimum shadow criteria. If the proposal does not meet the general Shadow Study criteria, the Shadow Study must identify other massing options that would meet the intent of shadow criteria.

The shadow model is to include the site (highlighted on the plan), as well as, surrounding streets, blocks, parks and all buildings located within the shadow impact boundary during the requested times. The shadow model is to be plotted in colour to a standard metric scale.

Solid Waste Disposal Area D-4 Assessment

A Solid Waste Disposal Area D-4 Assessment is required for development within an assessment area of 500 m from the fill area of a closed Solid Waste Disposal Area site. The assessment is to be prepare by a qualified Professional Engineer to determine:

- The impact of any potential methane gas migration.
- Whether the proposed use will be adversely affected by presence of the closed waste disposal site, which may include future mining or remediation efforts.
- That geo-technical conditions are safe and do not propose a threat or risk.
- Whether the proposed use will be adversely affected by ground and surface water contamination by leachate migrating from the waste disposal site.
- The impact of the proposed use on leachate migration from the landfill site.

Stormwater Management Report

A Stormwater Management Report, prepared by a qualified Professional Engineer, shall include the following information:

- Post-development quality and quantity control measures to pre-development levels.
- Post-development and pre-development calculations of flows for 2, 5, 25 and 100-year return storms.
- Detention of stormwater on roof and parking areas.
- Directing roof-leaders to rear yard ponding areas or soakway pits.
- Overland flows—with consideration given to over-sizing storm sewers to create pipe storage and/or reducing grading to allow greater ponding of stormwater and natural infiltration.
- Detention or permanent stormwater storage.
- Maintenance and operations including recommended measures for the continued maintenance of the system.

All stormwater management design is to be done in accordance with Provincial, Regional, and City standards.

Transportation Impact Study

A Transportation Impact Study, prepared by a qualified Professional Engineer, shall follow the City's Transportation Impact Study Guidelines and where applicable, Niagara Region, or Provincial standards.

Tree Preservation Plan

A Tree Preservation Plan, prepared by a Certified Arborist or Landscape Architect, shall indicate:

- Detailed inventory of all existing vegetation including surveyed location, species, size, and condition of plant material.
- Develop sites to avoid impacts to existing or proposed vegetation and landscaping. Trenchless replacement, torpedo or similar methods must be used where location of existing trees conflict with the proposed location of sewers and services.
- Minimize grade changes surrounding existing trees and vegetation.
- Recommendation and reasons for retention or removal.
- Tree and vegetation protection barriers for roots, trunk and branches to the drip line prior to and during site development.
- Locate access routes or construction routes away from protected areas.
- All tree protection fencing shall be 1 m past the drip line of a single tree or clump of trees. Buffer provided to protect root zone and minimize compaction impacts.
- All areas within tree protection fencing shall remain undisturbed and shall not be used for storage of building material, equipment, infill or stockpiling.
- Fencing may be required adjacent to Natural Heritage Features.
- Avoid cutting surface roots. In excavation, if root cuts are required, it should be done quickly with smooth flush cuts, be quickly backfilled and watered. Remove branch spending future dieback.
- The Owner is responsible to prune or replace any damaged trees or vegetation on site.
- Owner is responsible for any impacts, damage, remediation and replacement to existing vegetation located on the subject land and abutting properties.