SITE PLAN APPROVAL POLICY GUIDELINES AND STANDARDS

THE CORPORATION OF THE CITY OF SARNIA

Date of Last Revision: November, 2016

INDEX

THE CORPORATION OF THE CITY OF SARNIA
SITE PLAN REVIEW POLICY GUIDELINES AND STANDARDS

1. INTRODUCTION

Under the Planning Act (see Appendix "A") the City of Sarnia has passed a By-law (see Appendix "B") which designates all of the land in the City of Sarnia as a "Site Plan Control Area". This by-law prescribes that most types of development within the City are subject to site plan review and approval by the municipality. Renovations and/or additions to existing buildings may also be subject to site plan review.

Low density residential (two or fewer units) and farm-related classes of development are exempt from this process. A brief discussion with the appropriate Planning and Building staff would determine the necessity for, and details of, an application.

The Site Plan Review Committee is a staff Technical Committee empowered by Council to review and provide recommendations to the Director of Planning and Building on site plans to ensure that development is attractive, compatible with surrounding land uses and meets certain minimum standards. The Committee consists of representatives from the Planning and Building, Engineering and Fire Departments.

Depending upon the scale, complexity and information requirements of an application, the approval process may be completed in 2 to 8 weeks. Applications that involve complex issues may take 3 to 4 months. Ministry approvals such as Ministry of Transportation access permits or Ministry of the Environment and Energy servicing approvals will require 8 to 10 weeks from time of submission.

2. SITE PLAN REVIEW PROCESS

The Planning and Building Department is responsible for administration of the site plan approval process, including the co-ordination of requirements by other municipal departments and outside agencies, the preparation of site plan control agreements and the granting of approval.

A. Pre-Application

Applicants are encouraged to present preliminary site layout plans to the Planning and Building Department for review and discussion prior to submitting an application.

B. The Application

(a) An application form is completed by the owner or agent for the owner.
(b) Plans are prepared by the owner.
(c) The application form, required plans and proper fee are submitted to the Planning and Building Department and discussed with an appropriate staff person.
(d) A date, time and location for a meeting between the owner and the Site Plan Review Committee is established at the time the application is submitted.

A MINIMUM OF TWO (2) WEEKS IS REQUIRED FOR STAFF TO REVIEW THE PLANS PRIOR TO THE MEETING.

(e) Sites Abutting County Roads

i) Six sets of plans (see Section 3, Submission) are submitted to the Secretary/Chairman of the City's Site Plan Review Committee by 5:00 p.m. at least two (2) weeks prior to the scheduled meeting date.
ii) One of the six sets may then be submitted to the County of Lambton by the Secretary/Chairman.
iii) County approval must be obtained prior to final City of Sarnia site plan approval.

(f) Sites Not Abutting County Roads

Five sets of plans (see Section 3, Submission) are submitted to the Secretary/Chairman of the City's Site Plan Review Committee by 5:00 p.m. at least two (2) weeks prior to the scheduled meeting date.

C. Site Plan Review Committee

(a) Plans are circulated to staff members of the Site Plan Review Committee for individual comments.
(b) Meetings are held at City Hall. The setting is informal and open dialogue with the applicant/agent is encouraged.
(c) The Committee may recommend one of the following:
- approval of the plans as submitted
- approval of the plans subject to conditions, or
- refusal of the plans with a request for revised plans to be resubmitted for review.

(d) Following the meeting the minutes are prepared and made available to the applicant.
(e) If the plans have been recommended for approval subject to conditions, the plans are required to be modified to incorporate the conditions. Revised plans are to be resubmitted to the Secretary/Chairman of the Site Plan Review Committee, who ensures conditions have been addressed.

D. The Site Plan Control Agreement

Five [5] sets of approved plans are required for inclusion into the agreement.

(a) Five executed Site Plan Agreements, if required (see Section 4A - City of Sarnia requirements) must be returned to the Planning and Building Department.

(b) The agreements are then forwarded to the Director of Planning and Building for review in conjunction with the recommendations of the Site Plan Review Committee. The signature of the Director on the agreements indicates final approval. In the absence or incapacity of the Director, the Secretary/Chairman of the Site Plan Review Committee may sign the agreement

(c) Upon final approval, one signed copy of the registered Agreement is returned to the applicant.

(d) Where an applicant is not satisfied with any condition or requested modification of a staff reviewed site plan, the applicant may request, in writing, referral of the site plan to Council. Staff, in turn, will prepare a report for Council.

(e) If the applicant remains unsatisfied with Council's direction, he/she has the right to appeal to the Ontario Municipal Board.

3. THE SUBMISSION

To initiate the process for site plan approval the applicant must submit five (5) sets (six if abutting a County Road) of site, building elevation, grading, drainage, site servicing and landscape plans, as required, for the initial review. Generally, site development drawings should be completed to working drawing standards (preferably 20" x 24" - 500mm x 600mm sheets) showing all information necessary for the proper execution of construction work and for reviewing purposes.

Applicants should refer to the booklet entitled "Sarnia Engineering Standards and Specifications", which is available from the City's Engineering Department, to determine the latest engineering standards for the City.

Applicants should also refer to the appropriate Official Plan and Zoning By-law to ensure the proposed development complies with these documents.

A. Site Plan Review Checklist

A site plan should include:

(a) Key map
(b) Municipal street address
(c) North arrow
(d) Drawing scale (metric preferred)
(e) All driveways, sidewalks, curbing and ground cover to be labeled (e.g. sod, asphalt, paving stones)
(f) All proposed building setbacks and sidewalk, parking space and driveway width dimensions
(g) Existing site features including trees, rocks, watercourses, utilities, buildings
(h) Existing and proposed walls, fences and berms with details
(i) The location and screening of outdoor garbage and recycling facilities or utility facilities (e.g. air conditioning unit, hydro vaults, etc.)
(j) Proposed use of all buildings on site
(k) Uses of adjacent lands and buildings
(l) Parking layout including parking for the handicapped
(m) Location of access ramps for the handicapped
(n) Retaining walls, fences and screens with details
(o) Patios and recreational facilities
(p) All trees on municipal property (boulevards) abutting site
(q) Location of exterior lighting fixtures and standards (shown to be directed onto the site and not onto adjacent properties or streets)
(r) Existing vegetation with instructions for removal, preservation or treatment
(s) Proposed locations of trees, shrubs and ground cover clearly labeled and cross-references to a plant schedule
(t) Applicable planting details and schedules
(u) Sub-surface drainage methods for tree pits and planting areas in impermeable soil

(v) A site data chart which includes:
  i) total site area
  ii) building coverage as a percentage of site area
  iii) gross building floor area
  iv) number of floors in building
  v) total number of units (if a multiple family development)
  vi) building height
  vii) total landscaped area as a percentage of site area
  viii) required parking calculations
  ix) parking provided
  x) any other figures to show compliance with the Zoning By-law

(w) Property dimensions

(x) Benchmark location(s) and elevation

(y) Adjoining street(s) labeled

(z) All site details including service connections to City mains, curb and road cuts and restorations

(aa) Existing grades including those on adjoining properties and streets

(bb) Proposed grades in the form of spot elevations and drainage patterns at critical locations

(cc) Key elevations of all site features (i.e. top or bottom of retaining walls, etc.)

(dd) Building dimensions including grade elevations at all corners

(ee) First floor elevations of all buildings on site

(ff) Location of hydro and utility poles and hydrants on or adjacent to the site

(gg) Existing and proposed roads, driveways and parking areas with dimensions and details. All proposed curb cuts or road cuts including details for restoration

(hh) Existing and proposed curbs, sidewalks and walkways with dimensions and details

(ii) Dedicated road widening or servicing easement

(jj) All culverts and swales showing direction of flow and percent slopes

(kk) Existing and proposed underground services and connections showing pipe sizes, invert elevations, materials and grades. All parking lot catchbasins (1 per each 5,000 S.F. - 465m²) including flow restrictor details and calculations, where applicable. Storm water management including quality and quantity control is required. Calculations should be based on Appendix "G", Design Guidelines for Stormwater Management.

(ll) Locations, details and sections of wells, pumping stations, septic system, garbage storage/pick-up enclosures, oil interceptors, etc.

(mm) Engineer's, Architect's or Landscape Architect's stamp and signature certifying the plan

(nn) All buffer strips required by the Zoning By-law

(oo) Location and size of any free-standing signs

(pp) Type of building construction (e.g. combustible, non-combustible, sprinklered)

(qq) Appropriate general notes

(rr) Site impact study for traffic and detail drawings showing intersection improvements, turning lanes, widenings, etc. as may be required

Note: A site impact study for traffic may be required for developments, at the discretion of the City Engineer.

(ss) acknowledgment of any survey information relied upon

(tt) a double backflow preventer is required on all sprinkler systems and a backflow preventer is required on domestic water systems

B. Building Elevations

These drawings, if required by the Committee, should illustrate the elevations and cross-section views for each building to be erected, except this requirement does not apply to a building to be used for residential purposes containing fewer than 25 dwelling units.
These drawings should be sufficient to display:

i) the massing and conceptual design of the proposed building;
ii) the relationship of the proposed building to adjacent buildings, streets and exterior areas to which members of the public have access; and
iii) the provision of interior walkways, stairs, elevators and escalators to which members of the public have access from streets, open spaces and interior walkways in adjacent buildings

C. Landscape Plan

The landscape plan should illustrate the following details if applicable:
(see Appendix "D" for landscaping guidelines)

(a) location of all existing and proposed planting beds, trees, play areas, etc.
(b) extent of proposed sod or other ground cover
(c) plant material chart with plant size, quantity, spacing and species name (common and botanical names) for proposed plant materials

D. Site Servicing Plans

These plans shall be submitted in accordance with the requirements outlined in Appendix "C" and shall show all servicing works to be done on the site and adjacent public streets.

4. PRIOR TO APPLICATION AND/OR ISSUANCE OF A BUILDING PERMIT

The following is a list of approvals and requirements that must be fulfilled (if applicable) prior to the issuance of a building permit. It is the applicant's responsibility to determine through discussions with City staff what approvals are actually required.

A. City of Sarnia Requirements

(a) Site, landscape, site servicing, grading and drainage plans, if deemed necessary, must be reviewed by the Site Plan Review Committee and receive final approval by the Director of Planning and Building.

(b) Deeds/documents for road widenings or servicing easements must be prepared and conveyed.

(c) The registered owner of the land and all Encumbrancers will be required to enter into a Registered Site Plan Agreement with the City, agreeing to build in accordance with the approved plans.

(d) Prior to the execution of the Site Plan Agreement the owner must deposit with the City certain deposits and fees, which may include:

i) A $1,000 deposit to be retained until "as-constructed" drawings and an Engineer's or Architect's certification letter are received by the City

ii) A deposit equal to 100% of the value of the work to be done on City property
iii) A cheque for meeting and inspection fees by City forces as determined by the Director
iv) A cheque for each required fire hydrant flow test as determined by the Director.

See Appendix "C" - Item (e) for more information regarding these deposits.

(e) Any work performed on a City right-of-way shall be done by a contractor approved by the City and all work shall be done in accordance with City engineering specifications and related by-laws.

(f) A copy of the Engineer's Certificate of Liability Insurance in the amount of one million dollars

(g) As a condition of the development or re-development of land for residential purposes, and prior to the issuance of any building permit, land in an amount of 5% of the land proposed for development or re-development shall be conveyed to the City for parkland purposes. Cash-in-lieu of the whole or part of a required land dedication will be accepted if City Council determines such payment would be appropriate. In the event that cash-in-lieu of parkland is to be paid, the owner shall be required to enter into an agreement with the City fixing the amount of the cash payment and for the payment of such monies at the time of execution of the agreement.

B. County of Lambton Requirements

Applicants whose property abuts a County Road must ascertain if the following (or other conditions) are required by the County through discussions with the Site Plan Committee and the County which will provide advice and direction to the applicant:

(a) Entrance permit to County Roads from the County of Lambton
(b) Grading and drainage plan approval
(c) Deeds/documents for road widenings or servicing easements
(d) Site Plan approval

County conditions must be fulfilled prior to execution of a Site Plan Agreement and issuance of a building permit.

C. Other Requirements

Requirements of other agencies may have to be addressed prior to Site Plan Approval and/or issuance of a building permit as follows:

(a) St. Clair Region Conservation Authority approval for fill, construction or alteration to a waterway

(b) Ministry of Transportation of Ontario (MTO) approval of building location, signs, drainage or entrances for sites within 400 metres (1300') to a Highway intersection or sites within 45 metres (150') to a Highway right-of-way. They may also require approval for major developments within 800 metres (. mile) of MTO property. It is best to consult with them to determine their requirements.

(c) Ministry of Environment and Energy (MOEE) approval of site servicing plans may be required The Committee will provide advice and direction to the applicant regarding these and other agencies involvement in the process.

NOTE: For additional information or clarification of any of the above, please contact the City of Sarnia Planning and Building Department at (519) 332-0330.

APPENDICES

APPENDIX "A"

EXCERPT FROM THE PLANNING ACT RE: SITE PLAN CONTROL

41. (1) In this section, "development" means the construction, erection or placing of one or more buildings or structures on land or the making of an addition or alteration to a building or structure that has the effect of substantially increasing the size or usability thereof, or the laying out and establishment of a commercial parking lot or of sites for the location of three or more trailers as defined in clause (a) of paragraph 101 of section 210 of the Municipal Act or of sites for the location of three or more mobile homes as defined in subsection 46 (1) of this Act or of sites for the construction, erection or location of three or more land lease community homes as defined in subsection 46 (1) of this Act. R.S.O. 1990, c. P.13,s. 41 (1);1994,c. 4,s. 14.

(2) Where in an official plan an area is shown or described as a proposed site plan control area, the council of the local municipality in which the proposed area is situate may, by by-law, designate the whole or any part of such area as a site plan control area.

(3) A by-law passed under subsection (2) may designate a site plan control area by reference to one or more land use designations contained in a by-law passed under section 34.

(4) No person shall undertake any development in an area designated under subsection (2) unless the council of the municipality or, where a referral has been made under subsection (12), the Municipal Board has approved one or both, as the council may determine, of the following:

1. Plans showing the location of all buildings and structures to be erected and showing the location of all facilities and works to be provided in conjunction therewith and of all facilities and works required under clause (7) (a).

2. Drawings showing plan, elevation and cross-section views for each building to be erected, except a building to be used for residential purposes containing less than twenty-five dwelling units, which drawings are sufficient to display,

   (a) the massing and conceptual design of the proposed building;
   (b) the relationship of the proposed building to adjacent buildings, streets, and exterior areas to which members of the public have access; and
   (c) the provision of interior walkways, stairs, elevators and escalators to which members of the public have access from streets, open spaces and interior walkways in adjacent buildings,

   but which exclude the layout of interior areas, other than the interior walkways, stairs, elevators and escalators referred to in clause (c), the colour, texture and type of materials, window detail, construction details, architectural detail and interior design.

(5) Despite the exception provided in paragraph 2 of subsection (4), the council of the municipality may require the drawings mentioned therein for a building to be used for residential purposes containing less than twenty-five dwelling units if the proposed building is to be located in an area specifically designated in the official plan mentioned in subsection (2) as an area wherein such drawings may be required.

(6) Nothing in this section shall be deemed to confer on the council of the municipality power to limit the height or density of buildings to be erected on the land.

(7) As a condition to the approval of the plans and drawings referred to in subsection (4), a municipality may require the owner of the land to,

(a) provide to the satisfaction of and at no expense to the municipality any or all of the following:

1. Subject to the provisions of subsections (8) and (9), widenings of highways that abut on the land.

2. Subject to the Public Transportation and Highway Improvement Act, facilities to provide access to and from the land such as access ramps and curbings and traffic direction signs.

3. Off-street vehicular loading and parking facilities, either covered or uncovered, access driveways, including driveways for emergency vehicles, and the surfacing of such areas and driveways.

4. Walkways and walkway ramps, including the surfacing thereof, and all other means of pedestrian access.

5. Facilities for the lighting, including floodlighting, of the land or of any buildings or structures thereon.

6. Walls, fences, hedges, trees, shrubs or other groundcover or facilities for the landscaping of the lands or the protection of adjoining lands.

7. Vaults, central storage and collection areas and other facilities and enclosures for the storage of garbage and other waste material.

8. Easements conveyed to the municipality for the construction, maintenance or improvement of watercourses, ditches, land drainage works, sanitary sewage facilities and other public utilities of the municipality or local board thereof on the land.

9. Grading or alteration in elevation or contour of the land and provision for the disposal of storm, surface and waste water from the land and from any buildings or structures thereon;

(b) maintain to the satisfaction of the municipality and at the sole risk and expense of the owner any or all of the facilities or works mentioned in paragraphs 2, 3, 4, 5, 6, 7, 8 and 9 of clause (a), including the removal of snow from access ramps and driveways, parking and loading areas and walkways;

(c) enter into one or more agreements with the municipality dealing with and ensuring the provision of any or all of the facilities, works or matters mentioned in clause(a)or(d)and the maintenance there of as mentioned in clause (b) or with the provision and approval of the plans and drawings referred to in subsection (4). R.S.O. 1990, c. P.13, s. 41 (2-7).

(d) subject to subsection (9.1), convey part of the land to the municipality to the satisfaction of and at no expense to the municipality for a public transit right of way.

(8) Where an area designated under subsection (2) is within a county or a regional, metropolitan or district municipality, plans and drawings in respect of any development proposed to be undertaken in the area shall not be approved until the county or regional, metropolitan or district municipality has been advised of the proposed development and afforded a reasonable opportunity to require the owner of the land to,

(a) provide to the satisfaction of and at no expense to the county or regional, metropolitan or district municipality any or all of the following:

1. Subject to the provisions of subsection (9), widenings of highways that are under the jurisdiction of the county or regional, metropolitan or district municipality and that abut on the land.

2. Subject to the Public Transportation and Highway Improvement Act, where the land abuts a highway under the jurisdiction of the county or regional, metropolitan or district municipality, facilities to provide access to and from the land such as access ramps and curbings and traffic direction signs.

3. Where the land abuts a highway under the jurisdiction of the county or regional, metropolitan or district municipality, off street vehicular loading and parking facilities, either covered or uncovered, access driveways including driveways for emergency vehicles, and the surfacing of such areas and driveways.

4. Where the land abuts a highway under the jurisdiction of the county or regional, metropolitan or district municipality, grading or alteration in elevation or contour of the land in relation to the elevation of the highway and provision for the disposal of storm and surface water from the land;

(b) enter into one or more agreements with the county or regional, metropolitan or district municipality dealing with and ensuring the provision of any or all of the facilities, works or matters mentioned in clause (a) or (c) and the maintenance thereof at the sole risk and expense of the owner, including the removal of snow from access ramps and driveways and parking and loading areas;

(d) subject to subsection (9.1), convey part of the land to the county or regional, metropolitan or district municipality to the satisfaction of and at no expense to the municipality for a public transit right of way. R.S.O. 1990, c. P. 13, s.41 (8); 1994,c.23,s.24(1,2).

(9) An owner may not be required to provide a highway widening under paragraph I of clause (7) (a) or under paragraph I of clause (8) (a) unless the highway to be widened is shown on or described in an Official Plan as a highway to be widened and the extent of the proposed widening is likewise shown or described. R.S.O. 1990, c. P.13, s. 41 (9).

(9.1) An owner of land may not be required to convey land under clause 7(d)or 8(c) unless the public transit right of way to be provided is shown on or described in an Official Plan. 1994, c. 23, s. 24 (3).

(10) Any agreement entered into under clause (7) (c) or under clause (8) (b) may be registered against the land to which it applies and the municipality or the county or regional, metropolitan or district municipality, as the case may be, is entitled to enforce the provisions thereof against the owner and, subject to the provisions of the Registry Act and the Land Titles Act, any and all subsequent owners of the land.

(11) Section 326 of the Municipal Act applies to any requirements made under clauses (7) (a) and (b) and to any requirements made under an agreement entered into under clause (7) (c).

(12) Where the municipality fails to approve the plans or drawings referred to in subsection (4) within thirty days after they are submitted to the municipality for approval or where the owner of the land is not satisfied with any of the requirements made by the municipality under subsection (7) or by the county or regional, metropolitan or district municipality under subsection (8) or with any part thereof, including the terms of any agreement required, the owner of the land may require the plans or drawings or the unsatisfactory requirements or parts thereof of the agreement, as the case may be, to be referred to the Municipal Board by written notice to the secretary of the Board and to the clerk of the municipality or to the clerk of the county or regional, metropolitan or district municipality in the case of a requirement made by a county or regional, metropolitan or district municipality, and the Board shall then hear and determine the matter in issue and settle and determine the details of the plans or drawings and approve the same and settle and determine the requirements, including the provisions of any agreement required, and the decision of the Board is final.

(13) Where the council of a municipality has designated a site plan control area under this section, the council may, by by-law,

(a) define any class or classes of development that may be undertaken without the approval of plans and drawings otherwise required under subsection (4) or (5); and

(b) delegate to either a committee of the council or to an appointed officer of the municipality identified in the by-law either by name or position occupied, any of the council's powers or authority under this section, except the authority to define any class or classes of development as mentioned in clause (a).

(14) Section 35a of The Planning Act, being chapter 349 of the Revised Statutes of Ontario, 1970, as it existed on the 21st day of June, 1979, shall be deemed to continue in force in respect of any by-law passed under that section on or before that day.

(15) Every agreement entered into by a municipality after the 16th day of December, 1973 and before the 22nd day of June, 1979, to the extent that the agreement deals with facilities and matters mentioned in subsection 35a (2) of The Planning Act, being chapter 349 of the Revised Statutes of Ontario, 1970, as it existed on the 21st day of June, 1979, is hereby declared to be valid and binding. R.S.O. 1990, c. P.13, s. 41 (10-15).

APPENDIX "B"

OFFICE CONSOLIDATION OF
BY-LAW NUMBER 17 OF 1991
OF THE CITY OF SARNIA-CLEARWATER
AS AMENDED BY BY-LAWS 165 OF 1991, 112 OF 1994 AND 20 OF 1996

"A BY-LAW TO DESIGNATE A SITE PLAN CONTROL AREA"

WHEREAS the Planning Act, S.O. 1983, as amended, permits Council of a local municipality to designate by by-law the whole or any part of the area of the municipality shown in an Official Plan as a proposed site plan control area, as a site plan control area;

AND WHEREAS Council may define any class or classes of development which may be undertaken without the approval of plans and drawings otherwise required under the Planning Act and the By-Law;

AND WHEREAS Council is empowered to delegate to an appointed officer of the municipality any of Council's powers or authority in that regard, except the authority to define any class or classes of development which may be undertaken without the approval of plans and drawings otherwise required.

NOW THEREFORE the Municipal Council of The Corporation of the City of Sarnia-Clearwater enacts as follows:

1. For the purposes of this By-Law:

   (a) "Development" means the construction, erection or placing of one or more buildings or structures on land or the making of an addition or alteration to a building or structure that has the effect of substantially increasing the size or usability thereof, or the laying out and establishment of a commercial parking lot;

   (b) "Low Density Residential Development" means development for residential purposes containing fewer than three residential dwelling units upon completion;

   (c) "Farm Related Development" means the construction, erection or placing of one or more buildings or structures for agricultural and related usage on a farm, and shall include the residence of the farm operator.

2. All of the lands contained within the Official Plan of the former City of Sarnia and the Official Plan of the former Town of Clearwater, as amended from time to time, are hereby designated as a site plan control area pursuant to Section 40 of the Planning Act, S.O. 1983 and any amendments or successors thereto.

"A BY-LAW TO DESIGNATE A SITE PLAN CONTROL AREA"

3. The following classes of development are hereby defined as those that may be undertaken without the approval of plans and drawings which would otherwise be required under Subsections (4) or (5) of Section 40 of the Planning Act, 1983:

   (a) Low Density Residential as hereinbefore defined; and

   (b) Farm Related Development as hereinbefore defined.

4. Council's power and authority with respect to all matters provided for by Section 41 of the Planning Act, 1990, except the authority to define a class or classes of development which may be undertaken without the approval of plans and drawings which would otherwise be required, is hereby delegated to the Director of Planning and Building and, in the event of the absence or incapacity of the Director of Planning and Building, to the Secretary-Chairman of the Site Plan Review Committee.

4B. For greater certainty, but without in any way limiting the generality of the foregoing, the plans, specifications and conditions of agreement in relation to the works and facilities to be provided in conjunction with a particular development pursuant to S.40(4)(1) of the Planning Act, S.O. 1983, shall form part of the Site Plan Control Agreement entered into pursuant to the authority of this By-Law.

5. Any agreement entered into pursuant to Section 40 of the Planning Act, 1983 or its successor and pursuant to this By-Law shall be registered against the title of the land to which it applies.

6. Section 325 of the Municipal Act applies to any requirements made under clauses 7(a) and (b) of Section 40 and to any requirements made under an agreement entered into under clause 7(c) of Section 40 of the Planning Act, S.O. 1983, so that, in default of anything being done pursuant to those sections and agreements by the person required to do it, it may be done at his expense and the expense may be recovered in like manner as municipal taxes.

7. There shall be a site plan review committee to be composed of the following staff persons:

   (1) The Director of Planning and Building as an ex-officio member;

   (2) The Director of Planning and Building's designate, who shall be the Chairman and Secretary;

   (3) The City Engineer or designate;

   (4) The Fire Prevention Officer; and

   (5) Such other individuals as may be appropriate from time to time.

8. Minutes shall be taken by the Secretary at all Site Plan Review Committee meetings and forwarded to Council for information purposes.

9. In the event that any applicant or member of the public is dissatisfied with any condition or requested modification of a site plan recommended by the Site Plan Review Committee, that individual may request, in writing, referral of the site plan to Council. Upon receipt of such referral, staff shall prepare a report for Council's consideration with respect to the referral.

10. If any section or sections of this By-Law or parts thereof be found by any court to be illegal or beyond the power of Council to enact, such section or sections or parts thereof shall be deemed to be severable and all other sections or parts of this By-Law shall be deemed to be separate and independent therefrom and continue in full force and effect unless and until similarly found and this By-Law shall be enacted as such.

11. The short title of this By-Law is the "Site Plan By-Law".

This By-Law repeals By-Law Number 7924 of the City of Sarnia and By-Law Number 26 of 1978 and By-Laws Numbers 84 and 100 of 1979 of the Town of Clearwater, and supercedes any corresponding By-Laws of the former City of Sarnia or former Town of Clearwater which, through inadvertence, may not have been repealed.

APPENDIX "C"

SITE SERVICING AND PARKING REQUIREMENTS

For all Site Developments the following shall apply:

(a) The owner shall provide for the construction of sewers, watermains, roads, site grading and service connections as designed, certified and shown on the drawings prepared by a professional engineer, architect or landscape architect, and in accordance with the City of Sarnia Engineering Standards for Design and Construction (copies of this manual are available upon request).

The drawings required shall include, but not be limited to:

- a lot grading plan showing proposed and existing grades; and

- a servicing plan showing all existing and proposed services and utilities.

(b) The owner's plans as reviewed and accepted by the City Engineering Department shall form part of the Site Plan Agreement.

(c) The owner's consultant shall provide inspections for the installation of the site services in accordance with the approved plans and specifications. A final certified inspection report is required to be filed with the City.

All work on City property shall be co-ordinated with the Engineering Department and will require full-time inspection by the owner's consultant. All watermains shall be inspected and tested up to and including the curb stops or the on-site fire hydrants, in accordance with the City of Sarnia Engineering Standards for Design and Construction.

(d) (1) All work to be performed upon an existing City R.O.W. and on City streets shall comply with City By-laws, and the Owners shall obtain the necessary permits to cut the street surface and perform the required connections to the City mains.

(2) At least five (5) working days notice shall be given to the Director of Engineering prior to the construction of any sewers, watermains, roads, grading or other service work on the City right-of-ways.

(e) The Owner shall deposit the following with the City prior to the execution of the Agreement:

(1) A deposit, in the form of a certified cheque, the sum of **one thousand dollars ($1,000.00)** to be retained until such time as two sets of "as constructed" drawings and one computer disk containing the drawings in a digital AutoCad format (.dwg) or an equivalent .dxf format have been submitted to the Director and until an architect, professional engineer or landscape architect has given to the Director a letter addressed to the Director and signed by the engineer, architect or landscape architect certifying that all services on or in the said lands, required for this development or redevelopment, and not contained within a building, have been installed and completed in a manner satisfactory to the engineer, architect or landscape architect. Upon receipt of such drawings and letter, the said deposit shall be returned to the Owner without interest.

(2) A security shall be provided, in the form of a certified cheque or Letter of Credit (as per Schedule `B'), equal to 100% of the value (including G.S.T.) of the work to be done on City or County property. The Owner's consultant shall provide an estimate for the work to be approved by the Director. Upon substantial completion, as certified by the City and the Owner, the City will return 80% of the security without interest, 10% of the security will be held for 45 days until the construction lien period expires, in accordance with the construction Lien Act, S.O. 1983 and 10% will be retained by the City for future maintenance.

OR

A security shall be provided in the form of a certified cheque or Letter of Credit (as per Schedule `B') equal to 100% of the value (including G.S.T.) of the work to be done on City or County property. The Owner's consultant shall provide an estimate for the work to be approved by the Director. Upon substantial completion, as certified by the City and the Owner, the City will return 65% of the security without interest, 10% of the security will be held for 45 days until the construction lien period expires, in accordance with the Construction Lien Act, S.O., 1983 and 25% will be retained by the City for a two (2) year maintenance period. All securities returned to the Owner shall be without interest. The Owner guarantees the performance of the completed work provided for in this Agreement for a period of two (2) years from the date of substantial completion.

Prior to the expiry of the maintenance period the Owner shall:

(i) give the City Engineer documentation of any internal television inspection required by the City Engineer

(ii) flush and clean all sewers and catchbasins

(iii) correct and repair any deficiencies or difficulties which may have occurred or arisen during the maintenance period, all to the satisfaction of the City Engineer; and

(iv) provide a report to the City Engineer confirming that all deficiencies or difficulties have been corrected, which report will act as a notice for a request to the City Engineer for the maintenance clearance inspection.

Upon receipt of the report of the Owner, the City Engineer will undertake a maintenance clearance inspection of the work and, subject to the completion of any additional required work, will confirm that the work is satisfactory and complete.

Upon expiry of the maintenance period, and the completion of a maintenance clearance inspection to the satisfaction of the City Engineer, the Director may release to the Owner the final 25% of the security which the City has to which the Owner is entitled under this Agreement.

The City Engineer may require the Owner to provide internal television inspections of the sewer mains provided for in this Agreement to be made prior to the expiration of the maintenance period, and the costs of any such inspection shall be paid by the Owner.

(3) A cheque shall be provided for an amount to be determined by the Engineering Department for inspection and administration fees for the Engineering Department. This amount is an estimate only. The actual amount to be paid by the Owner will be calculated by the Director. If the actual cost is less than the estimate, the balance shall be refunded to the Owner. If the actual cost exceeds the estimate, the Owner shall pay to the City the balance required to make up the full cost of inspection and administration

(f) If the Owner wishes to use an existing sewer connection, the Owner shall expose each existing sewer connection and arrange to have a television inspection of it done all at his own expense. If the inspection reveals that the connection is unsuitable for use, the Owner shall be responsible for all costs associated with either repairing it or installing a new one, all to the satisfaction of the City Engineer, acting reasonably.

(g) Any work performed on a City right-of-way shall be done by a contractor approved by the City and all work shall be done in accordance with City engineering specifications and related by-laws.

(h) The Owner shall erect and maintain all required temporary traffic directional signs on the City or County right-of-way during the time they are needed for construction on the right-of-way to the satisfaction of the Director. If the Owner is unable or unwilling to provide satisfactory signs, the Owner hereby authorizes the City to erect and maintain the signs and the Owner agrees to pay the City all costs associated with the erection and maintenance of signs by the City.

(i) Any exterior lighting of a building, open space or signs shall have its intensity controlled and shall be directed away from the adjacent properties or streets.

(j) All parking areas shall be surfaced with concrete or asphalt pavement or paving stone and bounded by continuous concrete curbs and all parking spaces shall be clearly marked.

(k) All loading spaces shall be constructed and maintained with a stable surface which shall have a cement or asphalt binder.

(l) Any one loading space shall have a minimum width of 3.5 metres, a minimum length of 9 metres with a minimum vertical clearance of 4.5 metres and shall include such additional area as is necessary for the maneuvering of a vehicle into or out of the loading space.

(m) Two-way traffic movement between rows of parking will only be permitted where 90 degree angle parking is provided.

(n) Any parking space which is bounded on one or both sides by a wall or column shall have a minimum unobstructed width of 2.75 metres.

(o) All driveways shall be constructed to the following standards:
- (i) OPSD 350.01 for Urban Industrial, Commercial and Apartment Entrances;
- (ii) OPSD 351.01 for Urban Residential Entrances.

(p) All parking spaces for the handicapped shall be a minimum of 4.26 metres wide and 5.5 metres long.

(q) The minimum width of an entrance driveway at any point to carry two-way traffic shall be 7.2 metres and for an entrance driveway to carry one-way traffic shall be 3.6 metres.

(r) All parking areas shall conform to the minimum design standards contained in the table which follows on the next page of this document.

APPENDIX "C" (Continued)

SITE SERVICING AND PARKING REQUIREMENTS

ACCESSIBLE PARKING SPACE GUIDELINES

Accessible parking requirements apply to new parking facilities and the redevelopment of existing parking facilities. For the purposes of this requirement, re-painting of existing lines to mark parking spaces and other periodic maintenance or restorative activities do not trigger redevelopment requirements.

1) Size of Accessible Parking Spaces
   1. Off-street parking facilities must provide the following two types of parking spaces for the use of persons with disabilities
      i. Type A, a wider parking space which has a minimum width of 3.4m and signage that identifies the space as “van accessible”; and
      ii. Type B, a standard parking space which has a minimum width of 3.0m and length of 5.5m.

2) Access Aisles
   1. Access aisles, that is the space between parking spaces that allows persons with disabilities to get in and out of their vehicles, must be provided for all parking spaces for the use of persons with disabilities in off-street parking facilities.
   2. Access aisles may be shared by two parking spaces for the use of persons with disabilities in an off-street parking facility and must meet the following requirements:
      i. They must have a minimum width of 1.5m.
      ii. They must extend the full length of the parking space.
      iii. They must be marked with high tonal contrast diagonal lines, which discourages parking in them, where the surface is asphalt, concrete or some other hard surface.
   3. Access aisles adjacent to Type A parking spaces should be located adjacent to the passenger side of the vehicle if parked front first.
   4. Access aisles adjacent to Type B parking spaces should be located adjacent to the driver side of the vehicle if parked front first.

3) Location of Accessible Parking Spaces
   1. In determining the location of parking spaces for the use of persons with disabilities that must be provided where there is more than one off-street parking facility at a site, an development proponents may distribute them among the off-street parking facilities in a manner that provides substantially equivalent or greater accessibility in terms of distance from an accessible entrance or user convenience.
   2. For the purposes of subsection 3(a), the following factors may be considered in determining user convenience:
      i. Protection from the weather.
      ii. Security.
      iii. Lighting.
      iv. Comparative maintenance.

4) Accessible Parking Space Signage Requirements
   1. Development proponents shall ensure that parking spaces for the use of persons with disabilities are distinctly indicated by erecting an accessible permit parking sign in accordance with section 11 of Regulation 581 of the Revised Regulations of Ontario, 1990 (Accessible Parking for Persons with Disabilities) made under the Highway Traffic Act.

APPENDIX "C" (Continued)

SITE SERVICING AND PARKING REQUIREMENTS

PARKING TABLE

Dimensions of Parking Spaces

A parking space required hereby shall have the following minimum rectangular dimensions:

Parking Angle A	Stall Width B	Stall to Curb C	Aisle Width D	Curb Length per Car E	Curb to Curb Width F	Centre to Centre Width G
90'a	2.75	5.5	7.3	2.75	18.3	18.3
90'b	3	5.5	6.0	3	17.0	17.0
60'	2.75	6.1	5.0	3.1	17.2	15.7
45'	2.75	5.8	4.5	4	16.1	14.2
30'	2.75	5.1	4.0	5.3	14.2	11.9

Diagram 1

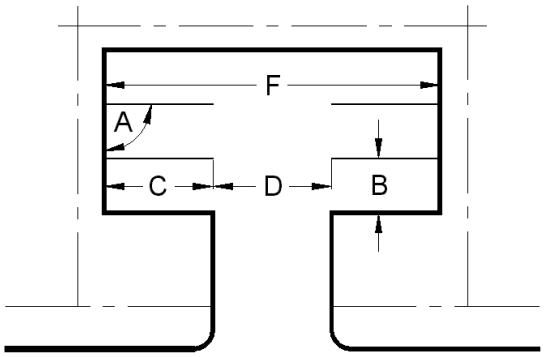
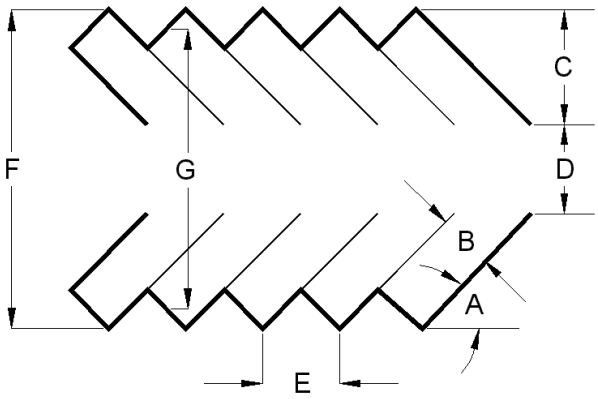
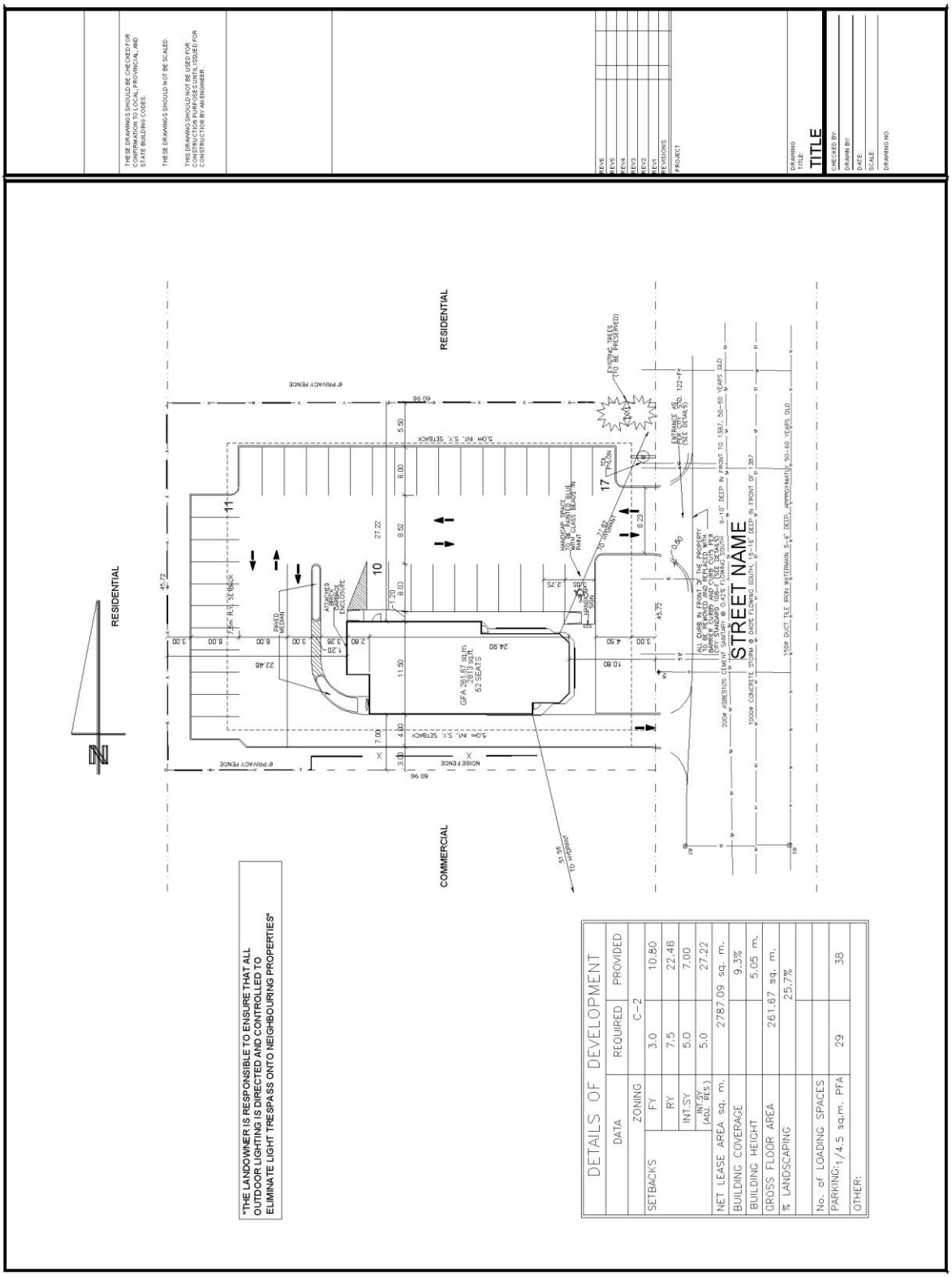


Diagram 2



APPENDIX "C" (Continued)

SITE SERVICING AND PARKING REQUIREMENTS - TYPICAL SITE PLAN



APPENDIX "D"

LANDSCAPING GUIDELINES FOR DEVELOPMENT

The following information is provided for anyone preparing a landscaping plan for submission to, and approval by, the City. The guidelines are intended to ensure that any plans submitted will contain sufficient information and will be drawn clearly enough to permit a thorough and rapid review of them. These guidelines do not constitute an exhaustive or final listing and do not preclude any alternate method of meeting them provided the alternate is acceptable to the City. The attached samples of a plant list and a landscaping plan are provided as examples of a format which would be acceptable to the City.

1. Landscape Plans

   a) The plant species to be employed for landscaping shall be listed on the Landscape Plan by its botanical name and common name and the height or caliper, location and quantity of each type shall be shown.

   b) Spot elevations shall be shown on the Landscape Plan to show final grading and, if berms or slopes are to be employed, elevations and slope ratios shall be indicated.

   c) The mature crown of plant materials shall be graphically illustrated on the plan.

2. Plant Materials

   a) Only those plant materials which are hardy in the Sarnia area are to be used. Soil condition, climatic factors and resistance to insects and disease are considerations in this regard.

   b) All landscaping shall be designed for minimum maintenance.

   c) Those plant materials which not only produce a pleasant effect but also may mature without significant thinning out of other plant material should be used. Spacing of materials is important in this regard.

3. Landscape Design

   a) All of the property in the front yard of the site that is to be planted with grass shall be sodded and not seeded.

   b) Evergreen plant materials shall be used wherever possible to provide year round effect.

   c) The parts of the property that are reserved for expansion or are otherwise unused shall be maintained as lawn.

   d) The landscape treatment shall not interfere with sight line requirements for vehicular circulation.

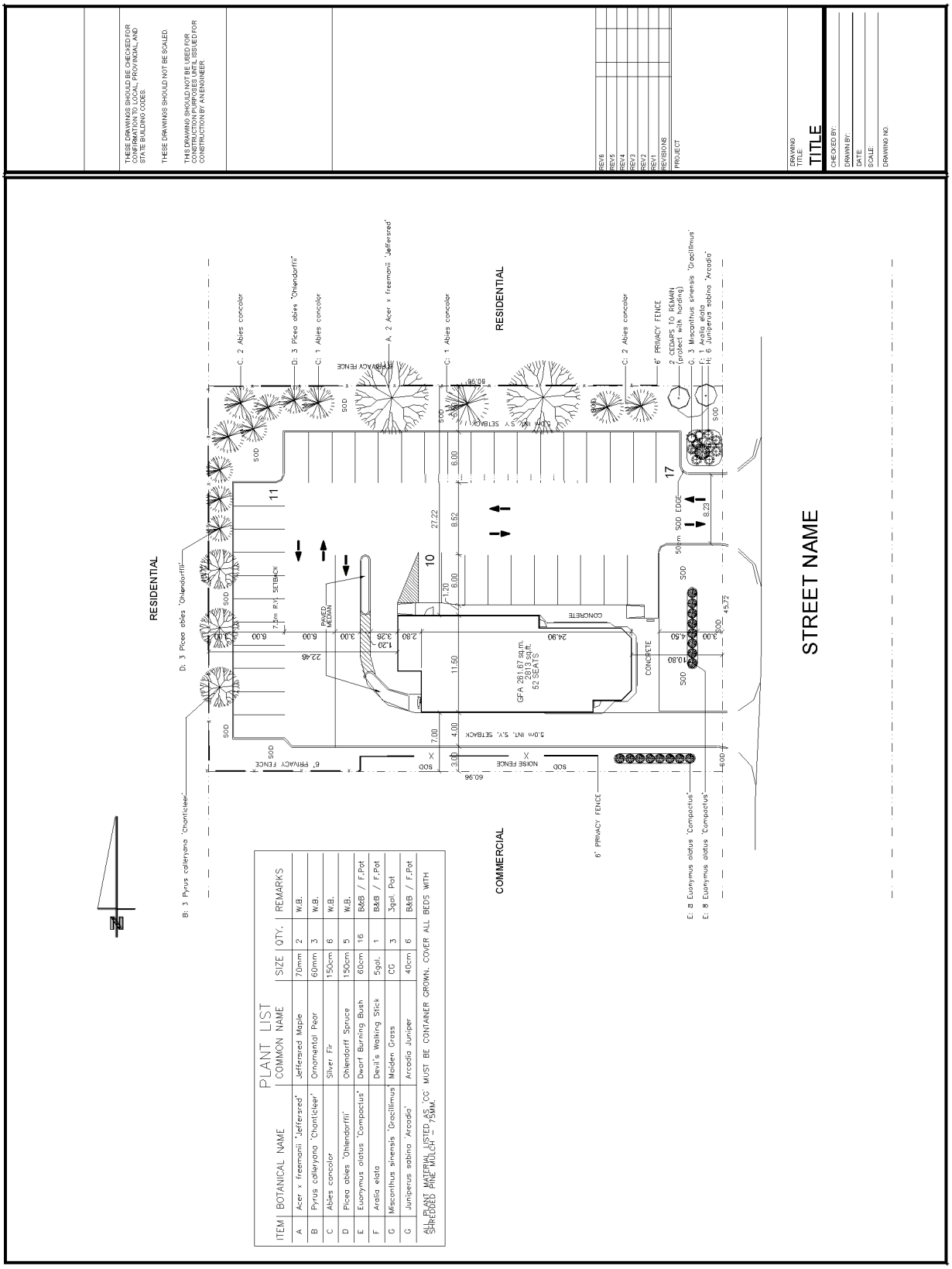
LANDSCAPING GUIDELINES FOR DEVELOPMENT

e) The function of a proposed development, the types and scale of the structures upon the site and the relationship of these to abutting properties and roads must be considered in preparing the landscape design. The developers should consider the use of other design elements in addition to plant materials such as berms, walkways, planters, pools, fountains, sculptures, decorative stone, fences, light fixtures, etc.

f) To reduce the potential for vandalism and to maintain public safety, secluded areas should be avoided in the landscape design.

APPENDIX "D" (Continued)

LANDSCAPING GUIDELINES FOR DEVELOPMENT - TYPICAL LANDSCAPING PLAN



APPENDIX "E"

FIRE DEPARTMENT GUIDELINES

SITE PLANNING STANDARDS FOR THE PROVISION OF LIFE SAFETY SERVICES, FIREFIGHTING, EMERGENCY SERVICES, ETC.

FIRE DEPARTMENT GUIDELINES

DEFINITIONS

The Building Code means: The current edition of The Ontario Building Code in effect on the day of design.

The Fire Code means: The current edition of The Ontario Fire Code in effect on the day of design.

FIRE DEPARTMENT GUIDELINES

DESIGN STANDARDS FOR FIRE DEPARTMENT ACCESS TO BUILDINGS

When access to a building is required, the design and construction of such access routes shall be in accordance with The Building Code and reviewed by the Sarnia Fire Rescue Service and shall:

1. Have a centerline turning radius of no less than 12.4 meters

2. Fire Route Signs may be required where designated by The Sarnia Fire Rescue Service and be installed at the owner's expense. Signs are to be purchased from the city Engineering Department.

3. The building or individual unit Municipal Address must be prominently displayed

WATER SUPPLY

1. An adequate supply of water meeting the requirements of The Building Code shall be supplied.

2. Dead end Water Mains are not allowed.

Notwithstanding the above The Sarnia Fire Rescue Service reserves the right to accept or reject any proposal.

APPENDIX "E" (Continued)

HYDRANTS

1. Only Fire Hydrants meeting the City of Sarnia Standard shall be installed.

2. Fire Hydrants shall be located in accordance with The Building Code.

3. Notwithstanding the above the Sarnia Fire Rescue Service reserves the right to request fire hydrants as deemed necessary.

4. When public hydrant(s) are located on the opposite side of a multi-lane (4 or more) highway, a private hydrant will be required

FIRE DEPARTMENT CONNECTIONS

1. The location of the Fire Department connection requires Fire Department approval.

2. Fire Department connections and shall be located in conformance with The Building Code.

TOWNHOUSE DEVELOPMENTS

1. Where units of a townhouse block front on amenity spaces, vehicular access shall be provided with hydrant spaces at not less than ninety (90) meter intervals.

2. (a) Access to blocks of townhouses should be from a street. A block of townhouses shall not exceed a distance of forty-five (45) meters without an access to the rear of a townhouse block.

   (b) Access to rear yards shall be provided by means of a three (3) meter break.

   (c) Visitor parking shall not block the aforementioned three (3) meter breaks given to rear of buildings for fire fighting purposes.

PROVINCIAL STANDARDS AND REGULATIONS

ALL RELAVENT CODES AND STANDARDS FOR THE PROVINCE OF ONTARIO AND MUNICIPAL BY-LAWS SHALL APPLY.

APPENDIX "F"

THE FOLLOWING TYPICAL NOTES ARE REQUIRED ON PLANS SUBMITTED FOR SITE PLAN APPROVAL

(Use only the notes which are appropriate for the project)

1. The General Contractor or appropriate sub-trade shall be responsible for notifying the following people at least 96 hours prior to commencement of construction:

    a) the City of Sarnia Engineering Department Inspector Contact:
    - Mr. Rob Williams at 332-0330 Ext.283 or
    - Mr. Mike Berkvens at 332-0330 Ext.355

    b) the Engineering Consultant

    c) the Plumbing Inspector for the County of Lambton at 845-0801

    No Work Shall Commence Until Such Notification Has Been Done

2. All work on City property shall be co-ordinated with the City's Engineering Department and will require full time inspection by the consultant on all underground servicing and part time on other work.

3. All work on City property shall only be done by a contractor that is approved by the City of Sarnia.

4. The road must be restored immediately after installation of services. If it is not possible then the contractor must immediately provide a temporary asphalt surface 50mm thick until permanent restoration can take place.

5. Pavement Structural Requirements (select applicable standard):

    a) For Construction in Sand Areas:

        i) Industrial, Arterial or Designated Bus Routes
        - 40mm H.L.3,
        - 65mm H.L.4,
        - 200mm Granular "A" compacted

        ii) Collector or Local Roads
        - 40mm H.L.3,
        - 40mm H.L.4,
        - 100mm Granular "A" compacted

        iii) Commercial Driveways and Parking Lots
        - 50mm H.L.3,
        - 150mm Granular "A" compacted

TYPICAL NOTES

b) For Construction in Clay Areas:

i) Industrial, Arterial or Designated Bus Routes
- 40mm H.L.3,
- 65mm H.L.4,
- 200mm Granular "A" compacted,
- 410mm Granular "B-1" compacted or;
- 275mm Granular "B-11" compacted

ii) Collector or Local Roads
- 40mm H.L.3,
- 40mm H.L.4,
- 100mm Granular "A" compacted
- 300mm Granular "B-1" compacted or;
- 200mm Granular "B-11" compacted

iii) Commercial Driveways and Parking Lots
- 50mm H.L.3,
- 150mm Granular "A" compacted

6. Replace sidewalk to first joint on each side of the driveway entrance with:

a) 50mm Granular "A" sub-base at driveway only
b) 50mm Granular "A" base under entire new sidewalk
c) 185mm of 25MPa concrete

7. Storm and sanitary sewers shall be rigid P.V.C., Tyton joint, constructed to A.S.T.M. Standard D3034, SDR28.

8. Safeguard all existing structures, services, utilities and plant materials which will be affected by the work of this contract

9. Each parking space that is designated for use by the handicapped shall have:
a) the surface painted blue with glass beads in the paint and
b) the handicapped parking symbol painted in the space and
c) a sign designating the space mounted on a post or wall at the end of it

10. All raised curbs are to stop 0.6 metres inside the property line. No raised curbs are permitted on City property.

APPENDIX "G"

Corporation of the City of Sarnia
Design Guidelines for Stormwater Management

Introduction

Stormwater management guidelines and criteria documents provide specific objectives and targets for stormwater management design and are themselves a subset of the complete suite of design objectives to address a full range of development considerations. As such these guidelines should be considered as a first step in the design process.

These guidelines replace previously issued guidelines. Due to the limitations of existing municipal storm conveyance infrastructure to meet potential increases in both frequency and duration of storm events attributable to Climate Change, these guidelines encourage both new development and redevelopment to incorporate into their storm water design low impact development (LID) as a strategy that seeks to mitigate the impacts of increased runoff and stormwater pollution by managing runoff as close to its source as possible.

LID comprises a set of site design strategies that minimize runoff and provide distributed, small scale structural practices that mimic natural or predevelopment hydrology through the processes of infiltration, evapotranspiration, harvesting, filtration and detention of stormwater.

These practices can effectively remove nutrients, pathogens and metals from runoff, and reduce the volume and intensity of stormwater flows.

A more complete discussion on the use of these design practises is included in Appendix B of this document and should be referenced by those designers unfamiliar with these concepts.

Guidelines for the design of stormwater management facilities

1. The Official plan shall be used to determine the forecast land use for tributary areas for storm sewer design for new developments.

2. Use of the Rational Method is acceptable for designing the storm sewers for minor storms using the following formula: $Q = 0.0028 \times C \times I \times A$ m^3/sec.

   where C is the runoff coefficient; I is the rainfall intensity (mm / hour) and A is the catchment area in hectares.

3. Current City standards require collector sewers to be sized for the 5 year return frequency for new developments. Surcharging of the existing storm sewer infrastructure is expected during larger storm events and major storm overland flow routes must be established to accommodate these flows.

4. For residential areas the determination of post development runoff shall be based on a two (2) year return period storm events with a maximum time of concentration of ten (10) minutes and with a demonstrated ability to manage events up to and including the one hundred (100) year return period storm event through a combination of at source, LID and end of pipe controls.

5. For Commercial and Industrial developments these storm water guidelines will apply for stormwater management for both quantity and quality control.

6. The City of Sarnia IDF curves as modified for Climate Change (refer to Appendix A) should be used for all rainfall runoff analysis.

7. The post development peak discharge from a development site is to be controlled to the equivalent 2 year predevelopment level for storms up to the 100 year return frequency.

8. Individual infill developments may have more stringent requirements for allowable runoff (e.g. mitigation of peak discharges to the 1 year predevelopment level for areas south of the highway 402 corridor, north of Campbell Street and west of East Street).

9. Re-development or extension to the existing development will be considered as an opportunity for a retro-fit to the above criteria. Such control may be achieved by adopting the policies outlined above using MOE recommended stormwater best management practices (BMPs) for lot level and conveyance controls.

10. As a minimum, all infill developments or additions to existing development must provide quantity and quality controls for the increased runoff from the site. For the purpose of establishing the increase in the runoff, all proposed changes will be considered changes based on the pre-development pervious surfaces. Existing soil conditions vary across Sarnia but typically the areas north of London Road are comprised of silty sands (use C=0.25) becoming more permeable as they approach Lake Huron, and soils to the south of London Road comprise silty clays (use C=0.35) becoming more impermeable to the south.

11. For infill development of sites up to 2 hectares (5 acres) and for parking lot storage design, use of the rational method (see example in Appendix) is encouraged.

12. In the absence of a detailed analysis of a proposed site based on the specific site parameters such as sub-soils, area, topography and material coverage, the following range of runoff coefficients, C shall be utilized in the Rational Method:

• Parks and Playgrounds		0.25 to 0.35
• Residential	- suburban	0.35
	- single family housing	0.45
	- townhouses	0.60
	- high density apartments	0.70
• Neighbourhood Commercial		0.65 to 0.75
• Commercial and Industrial		0.70 to 0.85
• High Value Commercial		0.85
• Gravel parking area		0.65
• Paved (non porous) parking		0.90 to 0.95

13. The developer's consulting engineer shall evaluate the effect of all applicable storms based on the IDF curves provided for the City of Sarnia and shall recommend the most appropriate design solution on a case-by-case basis.

14. For each problem (i.e. analysis of flood control, quality control, erosion control), a "critical" storm and return period should be selected for design purposes.

15. For stormwater quality control a 25mm design storm should be used.

    Where the development involves:-

    - Gas stations or significant parking areas;
    - Parking for more than 100 vehicles or >3000 m2 allocated to parking;
    - Loading/unloading zones for Commercial and/or Industrial areas;
    - The potential for oil spills.

    Oil/grit interceptors must be designed to treat the peak flow from the site.

16. For suspended solids removal, the normal protection criteria with at least 70% removal rate shall be used for sizing of the BMP facility discharging to municipal storm sewers.

17. A higher level (up to 80%removal) may be required by the City where storms sewer discharges are located close to aquatically sensitive water courses, sensitive aquifers or wet lands habitat or where the proposed use of the development is considered a greater risk to the environment.

18. Stormwater designs may also be required to be reviewed by the St Clair Region Conservation Authority (SCRCA) where stormwater from the proposed site outlets to a water course which falls under their control or jurisdiction.

19. Stormwater design will also require review by the Ontario Ministry of Transportation (MTO) for projects abutting to or discharging to MTO lands in accordance with their Corridor Control regulations.

20. Design of stormwater management facilities such as dry/wet ponds should be carried out based on appropriate flow routing methods. Use of industry standard software/models is encouraged for rainfall runoff analyses and flow routing. However, the accuracy of the results must be independently verified by the developer's engineer.

21. MOE approval will be required for Stormwater Management designs for projects located on Industrial lands (typically required on sites zoned Industrial or Light Industrial) which are not exempted by their proposed use under Ontario Regulation 525/98. Refer to the definition of *Industrial Lands* within the legislation to determine whether a Commercial or Institutional project is exempt from Section 53 MOE Approval for a non-industrial use on zoned Industrial lands.

22. Stormwater management BMPs should also provide for measures for winter runoff control and frozen ground conditions. Maintenance requirements for the recommended BMPs must be discussed in the report and responsible parties identified.

23. Stormwater Management Planning and Design Manual (MOE, 2003) should be referred to in order to address all other issues, including quality control and ongoing maintenance requirements not covered by these guidelines.

Additional information to be included in a Stormwater Management Report

A storm water management report shall include where applicable the following:

1. Project location, description, and physical features including existing and proposed development;
2. Adjacent land use and proposed project land use;
3. Watershed contribution and potential impacts to water bodies and existing stormwater outlets either upstream or downstream of the proposed project;
4. Beneficial uses of surface waters and ground water surrounding the project;
5. Characterization of project runoff both pre-project and post-project, conditions of concern, locations of storm water outfall(s), tributary drainage area to outfall(s), changes in downstream erosion potential, and site hydrology;
6. Water quality pollutants of concern, treatment volume based on water quality design storm, site plans and adjacent land use, and soil characteristics;
7. Summary of low impact design (LID) measures proposed for use on the project;
8. Specified orifice controls (minimum size to be 70mm), maximum ponding depths (300mm maximum in paved areas) and bypass routes for overland flows;
9. Mitigation measures to protect water quality, pollution prevention BMPs, site design BMPs, source control BMPs, natural BMPs, and structural treatment BMPs;
10. Mitigation measures to prevent any increase in downstream erosion;
11. Specify agreements, easements, and any licenses relating to the redevelopment and construction of the stormwater management measures proposed, including their location, access for maintenance and any changes in drainage characteristics;
12. Provide a project map identifying relevant watersheds and surface water bodies within the project area;
13. Information relating to threats to water quality including (1) soil erosion potential; (2) site slope; (3) project size and type; (4) sensitivity of receiving water bodies; (5) proximity to receiving water bodies; and (6) non-storm water discharges.

Above items may be shown on other application documents such as the tentative map, preliminary grading plan, or preliminary drainage study. If this is done, the SWMP report must identify where each of these component pieces can be found.

As the contents of the SWMP Report are of engineering nature, the report must be signed and sealed by an Ontario licensed professional engineer.

APPENDIX A

Modified Rainfall Data for the City of Sarnia (based on records from 1964 - 2006)

Modified Return Period Rainfall Amounts (mm) (For use from 2012 to 2042)

	Return Period (years)					
Duration	2	5	10	25	50	100
5 min	10.56	14.52	17.27	20.57	23.1	25.63
10 min	14.85	20.35	24.09	28.71	32.12	35.53
15 min	17.93	24.53	28.93	34.43	38.5	42.57
30 min	23.1	31.24	36.63	43.45	48.51	53.57
1 h	27.61	36.52	42.46	49.94	55.55	61.05
2 h	32.01	42.57	49.61	58.41	65.01	71.5
6 h	42.13	55.22	63.91	74.91	83.05	91.08
12 h	50.05	65.12	75.02	87.56	96.8	106.04
24 h	57.64	74.03	84.81	98.56	108.79	118.8

Modified Return Period Rainfall Rates (mm/h) - 95% Confidence limits

	Return Period (years)					
Duration	2	5	10	25	50	100
5 min	126.2	174.7	206.7	247.3	277.4	307.2
10 min	89.1	122.3	144.3	172.2	192.8	213.3
15 min	71.8	98.2	115.6	137.7	154.0	170.3
30 min	46.3	62.6	73.4	87.0	97.0	107.1
1 h	27.6	36.5	42.5	49.9	55.6	61.1
2 h	16.0	21.2	24.8	29.3	32.5	35.8
6 h	7.0	9.2	10.7	12.4	13.9	15.2
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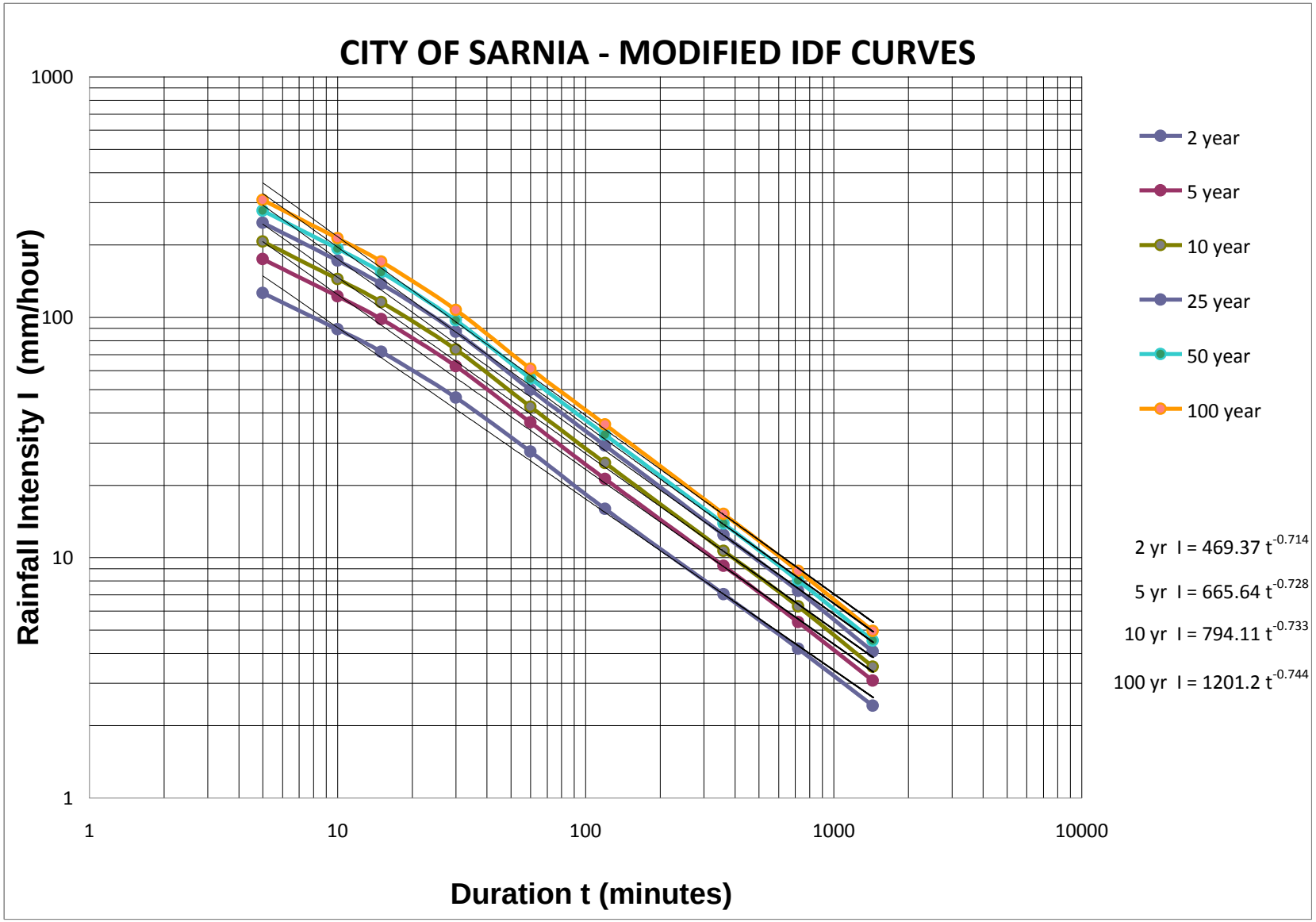
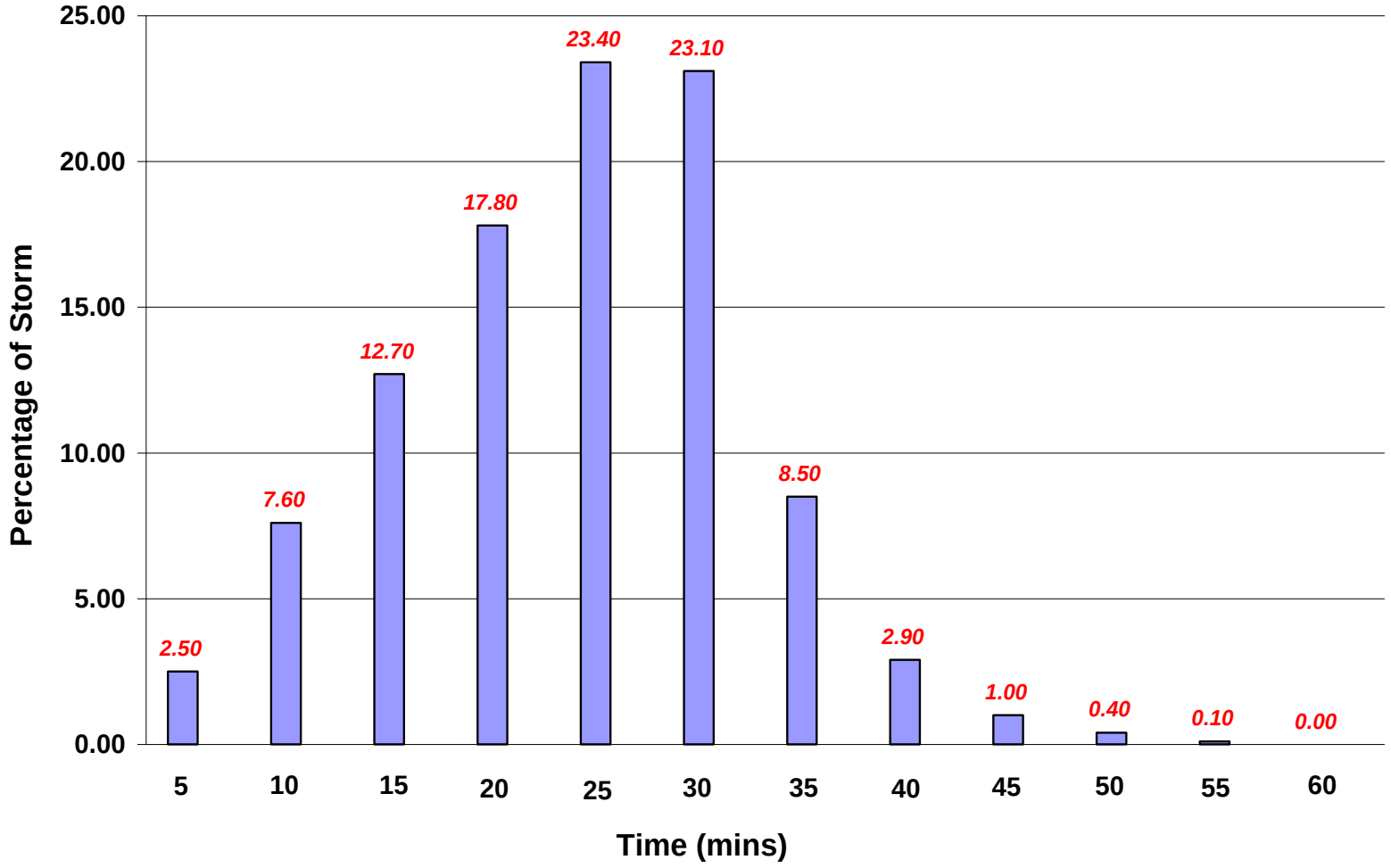
24 h	2.4	3.1	3.5	4.1	4.5	5.0


CITY OF SARNIA - MODIFIED IDF CURVES
Rainfall Intensity I (mm/hour)
1000
100
10
1
1
10
100
1000
10000
Duration t (minutes)
2 year
5 year
10 year
25 year
50 year
100 year
2 yr I = 469.37 t^-0.714
5 yr I = 665.64 t^-0.728
10 yr I = 794.11 t^-0.733
100 yr I = 1201.2 t^-0.744

1- Hour AES Storm Distribution for Sarnia



APPENDIX B

Ancillary Design Guidelines for Low Impact Development (LID)

1 Introduction:

Low Impact Development (LID) comprises a set of site design strategies that minimize runoff and provide distributed, small scale structural practices that mimic natural or predevelopment hydrology through the processes of infiltration, evapotranspiration, harvesting, filtration and detention of stormwater. These practices can effectively remove nutrients, pathogens and metals from runoff, and reduce the volume and intensity of stormwater flows.

The proponents Engineer retained to prepare the Stormwater Management Report accompanying a Site Plan Application (SPA) for either a new "Greenfield" or an existing "Brownfield" site should be familiar with the latest version of the publication entitled
Low Impact Development (LID) Stormwater Management Planning and Design Guide
2010. This has been developed as a joint initiative of the Toronto and Region and Credit Valley Conservation Authorities and in consultation with representatives from the Ministry of the Environment, Fisheries and Oceans Canada, GTA municipalities and the development industry.

The *LID SWM Guide* focuses on a number of lot level and conveyance stormwater management practices that have been used extensively in Europe, the United States, British Columbia and at demonstration sites in Ontario. These low impact development practices include green roofs, bioretention, permeable pavement, soakaways, perforated pipe systems, enhanced grass swales, dry swales and rainwater harvesting.

The *LID SWM Guide* recommends and supports the use of the treatment train approach for stormwater management. Accordingly Engineers should also refer to the Stormwater Management and Design Manual (MOE, March 2003), as a guide for incorporating more traditional practices such as wet ponds and wetlands into the overall stormwater management planning and design process.

This set of guidelines is not intended to limit innovation or restrict the use of creative solutions for stormwater management. Indeed the municipality encourages the development of innovative designs and technologies.

Acknowledging that it will not always be possible to maintain the predevelopment water budget of a site, predicted increases in runoff from land development that cannot be mitigated through stormwater infiltration practices should be minimized through practices that either evapotranspire (*e.g.,* green roofs, bioretention), or harvest runoff for non-potable uses (*i.e.*, rainwater harvesting). In areas where development has already taken place, LID can be used as a retrofit practice to reduce runoff volumes, pollutant loadings, and the overall impacts of existing developments on receiving waters.

LID practices can include:

- conservation site design strategies (i.e., non-structural LID practices);
- infiltration practices;
- rainwater harvesting;
- runoff storage and evapotranspiration;
- runoff conveyance;
- filtration practices; and
- landscaping.

Studies show that implementing LID practices can have multiple positive environmental effects including:

- protection of downstream resources;
- abatement of pollution;
- recharge of groundwater;
- improvement of water quality;
- improvement of habitat;
- reduced downstream flooding and erosion;
- conservation of water and energy; and
- improved aesthetics in streams and rivers.

These combined benefits help to mitigate potential negative impacts of climate change on groundwater levels, risk of flooding and stream channel erosion.

Treatment train stormwater management strategies that integrate a full range of facility types have the potential to achieve a broader range of benefits including:

- maintaining and enhancing shallow groundwater levels and interflow patterns;
- maintaining predevelopment drainage divides and catchment discharge points;
- moderating run off velocities and discharge rates;
- improving water quality;
- enhancing evapotranspiration;
- maintaining soil moisture regimes to support the viability of vegetation communities;
- maintaining surface and groundwater supplies to support existing wetland, riparian and aquatic habitats.

It is important that stormwater management plans be developed with consideration of the different types of runoff source areas that will be present, and recognition of source areas with low to moderate contamination potential that represent opportunities for rainwater harvesting, permeable pavement and other stormwater infiltration practices.

Furthermore, it is vital to ensure that relatively clean runoff is not mixed with lesser quality runoff from surfaces that are subject to higher levels of contamination, rendering it less suitable for infiltration or harvesting.

These guidelines recognise that a number of sites, particularly in infill development, may not be able to incorporate all the above practises within the site limitations due to site specific constraints; however the following lists of potential mitigation measures should be addressed in any design submission made to City staff during the review process.

Potential opportunities to integrate SWMPs at the site level stage in the planning process include:

- harvesting of rainwater from rooftops for non-potable uses (*e.g.*, irrigation, toilet flushing) using rain barrels or cisterns;
- installation of green roofs;
- drainage of runoff from rooftops to pervious or depression storage areas;
- integration of soakaways (*e.g.*, infiltration trenches or chambers) below landscaped areas, parking areas, parks, sports fields, etc.;
- incorporation of bioretention areas, rain gardens, biofilters or constructed wetlands into the landscape design for the site;
- use of permeable pavement in low and medium traffic areas;
- incorporation of bioretention areas, vegetated filter strips, and swales to intercept and treat parking lot and road runoff;
- incorporation of woodland restoration in upstream areas to reduce runoff rates;
- integration of detention ponds and wetlands as large aesthetic and recreational features within the landscape.

Stormwater management opportunities that should be explored for infill and retrofit developments include:

- roof top storage;
- green roofs;
- rainwater harvesting;
- bioretention areas;
- biofilters;
- grassed swales;
- permeable pavement;
- rain gardens;
- stormwater planters and fountains;
- depression storage;
- soakaways;
- constructed wetlands; and
- enhanced urban tree canopy.

Key principles for low impact development design can be summarized as follows:

1 Use existing natural systems as the integrating framework for planning

1.1 Consider regional and watershed scale contexts, objectives and targets;
1.2 Look for stormwater management opportunities and constraints at watershed/subwatershed and neighbourhood scales;
1.3 Identify and protect environmentally sensitive resources;

2 Focus on runoff prevention

2.1 Minimize impervious cover through innovative site design strategies and application of permeable pavement;
2.2 Incorporate green roofs and rainwater harvesting systems in building designs;
2.3 Drain roofs to pervious areas with amended topsoil or stormwater infiltration practices;
2.4 Preserve existing trees and design landscaping to create urban tree canopies

3 Treat stormwater as close to the source area as possible

3.1 Utilize decentralized lot level and conveyance stormwater management practices as part of the treatment train approach;
3.2 Flatten slopes, lengthen overland flow paths, and maximize sheet flow;
3.3 Maintain natural flow paths by utilizing open drainage (*e.g.*, swales).

4 Create multifunctional landscapes

4.1 Integrate stormwater management facilities into other elements of the development to conserve developable land;
4.2 Utilize facilities that provide filtration, peak flow attenuation, infiltration and water conservation benefits;
4.3 Design landscaping to reduce runoff, urban heat island effect and enhance site aesthetics.

5 Educate and maintain

5.1 Municipality will develop legal agreements to ensure long-term operation and maintenance of private facilities.
5.2 Municipalities to develop guidelines and training for property owners and their managers on how to monitor and maintain lot level stormwater management practices on private property;
5.3 Municipalities to develop training programs for staff to monitor and maintain lot level and conveyance stormwater management practices on public property;

Table 1: Types of stormwater source areas, typical runoff characteristics and opportunities for treatment and use

Stormwater Source Area	Runoff Characteristics	Opportunities	Principles
Foundation drains, slab underdrains, road or parking lot underdrains	Relatively clean, cool water.	Suitable for infiltration or direct discharge to receiving watercourses.	Should not be directed to stormwater management facility that receives road or parking lot runoff.
Roof drains, roof terrace area drains, overflow from green roofs	Moderately clean water, contaminants may include asphalt granules, low levels of hydrocarbons and metals from decomposition of roofing materials, animal droppings, natural organic matter and fall out from airborne pollutants, potentially warm water.	- Infiltration; - Filtration; - Harvesting with rain barrels or cisterns and use for non-potable purposes (*e.g.*, irrigation, toilet flushing) after pretreatment; - Attenuation and treatment in wet pond or wetland detention facility.	Runoff should be treated with a sedimentation and/or filtration practice prior to infiltration. Where possible, runoff should not be directed to end-of-pipe facilities to capitalize on potential for infiltration or harvesting. Flow moderation (quantity control) prior to discharge to receiving watercourse is required.
Low and medium traffic roads and parking lots, driveways, pedestrian plazas, walkways	Moderately clean water, contaminants may include low levels of sediment, de-icing salt constituents, hydrocarbons, metals and natural organic matter. Typically warm water.	- Infiltration after pretreatment; - Filtration after pre-treatment; - Harvesting with cisterns or permeable pavement reservoirs and use for outdoor non-potable purposes (*e.g.*, vehicle washing, irrigation) after pretreatment; - Attenuation and treatment in wet pond or wetland detention facility.	Runoff should be treated with a sedimentation and/or filtration practice prior to infiltration. Flow moderation (quantity control) prior to discharge to receiving watercourse is required. Water quality should be tested prior to use for non-potable purposes.
High traffic roads and parking lots	Potential for high levels of contamination with sediment, de-icing salt constituents hydrocarbons and metals. Typically warm water.	- Filtration after sedimentation pre-treatment; - Attenuation and treatment in wet pond or wetland detention facility; - Infiltration after pretreatment only where groundwater uses are limited.	Runoff should be treated with a sedimentation and/or filtration pretreatment practice prior to infiltration.
Pollution hot spots* such as vehicle fueling, servicing or demolition areas, outdoor storage and handling areas for hazardous materials, some heavy industry sites	Potential for high levels of contamination with sediment, de-icing salt constituents, hydrocarbons, metals, and other toxicants.	- Attenuation and treatment in wet pond, wetland or hybrid detention facility; - Potential requirement for sedimentation pretreatment; - Infiltration and harvesting practices not recommended.	Runoff from these sources should not be infiltrated or used for irrigation. Spill containment or mitigation devices recommended contingent on size of storage facilities.

Table 2: Comparison of site constraints for a range of structural LID SWM practices

LID Stormwater Management Practice	Depth to high water table or bedrock[1] (m)	Typical Ratio of Impervious Drainage Area to Treatment Facility Area	Native Soil Infiltration Rate (mm/hr)[3]	Head[4] (m)	Space[5] %	Slope[6] %	Pollution Hot Spots[7]	Set backs[8]
Rain barrel	Not applicable	[5 to 50 m_2][2]	Not applicable	1	0	NA	Yes	None
Cistern	1	[50 to 3000 m_2][2]	Not applicable	1 to 2	0 to 1	NA	Yes	U, T
Green roof	Not applicable	1:1	Not applicable	0	0	0	Yes	None
Roof downspout disconnection	Not applicable	[5 to 100 m_2][2]	Amend if < 15 mm/hr[9]	0.5	5 to 20	1 to 5	Yes	B
Soakaway, infiltration trench or chamber	1	5:1 to 20:1	Not a constraint	1 to 2	0 to 1	< 15%	No	B, U, T, W
Bioretention	1	5:1 to 15:1	Underdrain required if < 15 mm/hr	1 to 2	5 to 10	0 to 2	No	B, U, W
Biofilter (filtration only Bioretention design)	Not applicable	5:1	Not applicable	1 to 2	2 to 5	0 to 2	Yes	B, T
Vegetated filter strip	1	5:1	Amend if < 15 mm/hr[9]	0 to 1	15 to 20	1 to 5	No	None
Permeable pavement	1	1:1 to 1.2:1	Underdrain required if < 15 mm/hr	0.5 to 1	0	1 to 5	No	U, W
Enhanced grass swale	1	5:1 to 10:1	Not applicable	1 to 3	5 to 15	0.5 to 6	No	B, U
Dry swale	1	5:1 to 15:1	Underdrain required if < 15 mm/hr	1 to 3	5 to 10	0.5 to 6	No	B, U, W
Perforated pipe system	1	5:1 to 10:1	Not a constraint	1 to 3	0	< 15%	No	B, U, T, W

Notes:

1. Minimum depth between the base of the facility and the elevation of the seasonally high water table or top of bedrock.
2. Values for rain barrels, cisterns and roof downspout disconnection represent typical ranges for impervious drainage area treated.
3. Infiltration rate estimates based on measurements of hydraulic conductivity under field saturated conditions at the proposed location and depth of the practice.
4. Vertical distance between the inlet and outlet of the LID practice.
5. Percent of open pervious land on the site that is required for the LID practice.
6. Slope at the LID practice location.
7. Suitable in pollution hot spots or runoff source areas where land uses or activities have the potential to generate highly contaminated runoff (*e.g.*, vehicle fueling, servicing or demolition areas, outdoor storage or handling areas for hazardous materials and some heavy industry sites).
8. Setback codes: B = Building foundation; U = Underground utilities; T = Trees; W = drinking water wellhead protection areas.
9. Native soils should be tilled and amended with compost to improve infiltration rate, moisture retention capacity and fertility.

APPENDIX "H"

Excerpt from City of Sarnia Official Plan Chapter 5, Community Development.

5.2 COMMUNITY DESIGN

Good community design adds value to a community – socially, culturally, environmentally and economically – resulting in greater community distinctiveness and identity. Spaces and buildings that help create visually attractive streets, neighbourhoods and landscapes make a city attractive to residents, visitors and businesses. Good design also improves accessibility, safety and can contribute to crime prevention.

The City recognizes the importance of community design to the quality of its environment. High-quality architecture, landscaping and construction will be promoted to ensure new development enhances the quality of the environment, including:

a) conservation of the natural environment and cultural heritage resources;
b) compact urban form in the interests of the efficient use of land and services;
c) integration of compatible land uses;
d) linkages and connectivity (pedestrian, cycling, vehicular and transit);
e) longevity of public and private services and facilities;
f) safety and accessibility;
g) consistency in building setbacks and other features, where appropriate;
h) aesthetics; and
i) flexible standards, such as road allowance widths, tree plantings in boulevards, and stormwater management practices.

Creativity and excellence in architecture, landscape and design should be encouraged in private developments through such programs as Community Design Awards.

5.2.1 Guidelines for New Development

1. Location and Organization

New development shall be located and organized to fit the existing or planned character of the neighbourhood or district and shall frame and support adjacent streets, parks and open spaces. New buildings shall contribute to a pedestrian-friendly public realm in the following ways:

a) buildings shall be located parallel to the street or along the edge of a park or open space with a consistent front yard setback. On a corner site, the development should be located along both adjacent street frontages;
b) main building entrances shall be located so that they are clearly visible and directly accessible from the public sidewalk;
c) ground floor uses shall have views into, and where possible, access to, adjacent streets, parks and open spaces;
d) existing mature trees shall be preserved wherever possible and incorporated into landscape designs; and
e) use Crime Prevention Through Environmental Design (CPTED) principles to enhance the safety of the community.

2. Massing, Scale and Design

New buildings shall be massed and exterior façades designed to fit harmoniously into the existing or planned context. The impact on neighbouring streets, parks, open spaces, and properties shall be limited in the following ways:

a) new buildings shall be massed to frame adjacent streets and open spaces in a way that respects the existing and/or planned street proportion;
b) new buildings shall allow for appropriate transitions in scale to neighbouring existing or planned buildings;
c) adequate light and privacy shall be provided for users of the building and for users of adjacent buildings and spaces; and

d) shadowing of and uncomfortable wind conditions on neighbouring streets, properties, parks and open spaces caused by the buildings shall be minimized.

3. Parking and Servicing

Vehicle parking, vehicular access, service areas and utilities shall be located and organized to minimize their impact on the property and on surrounding properties to improve the safety and attractiveness of adjacent streets, parks and open spaces by:

a) using shared service areas where possible, including public and private lanes, driveways and service courts to minimize points of conflict;
b) consolidating and minimizing the width of driveways and curb cuts across the public sidewalk;
c) screening surface parking lots from adjacent streets;
d) integrating service and utility functions within buildings where possible;
e) providing underground parking where possible;
f) limiting surface parking between the front face of the building and public street or sidewalk; and
g) integrating above-ground parking structures, where permitted or appropriate, with building design, and have usable space at-grade facing adjacent streets, parks and open spaces.

4. Amenity Space

Every significant new multi-residential development will provide indoor and outdoor amenity space for residents of the new development. Each resident of such development will have access to outdoor amenity spaces such as balconies, terraces, courtyards, rooftop gardens and other types of outdoor spaces.

5. Buffering and Screening

In order to minimize the negative effects of development on other land uses, buffering and/or screening will be provided wherever conflicts are identified. The City's Zoning By-law, site plan agreements and other special agreements will ensure that adequate buffering and/or screening is provided as required.

Buffering and/or screening may include one or more of the following measures:

a) the separation of uses and/or buildings by means of greater-than-normal setbacks;
b) restrictions on outside storage of goods, materials or equipment;
c) restrictions on parking facilities;
d) restrictions on loading facilities in industrial or commercial areas;
e) restrictions on the location and type of outdoor lighting equipment, including the direction of illumination;
f) the installation of fences, walls and earth berms to create a visual barrier; and
g) vegetative screens and other forms of landscaping.

6. Light Pollution

Excess or unwanted artificial lighting in the evening and at night can cause individual nuisance and safety problems and be detrimental to the enjoyment of the night sky by the community.

The City will endeavour to ensure that all external lighting is fit for its purpose and that such lighting is power-efficient, downward-directed and shielded so as to prevent light pollution, and minimize cost, energy waste, and other adverse environmental consequences.

7. Urban Design Briefs

For new development or redevelopment, the submission of an Urban Design Brief shall be required to demonstrate consistency with the design policies of this Plan to the satisfaction of the City.

5.2.2 Public Realm

City streets serve pedestrian and vehicles and provide space for public utilities and services, trees, landscaping and building access. They act as public gathering spaces and provide amenities such as view corridors, street furniture, sky views and sunlight. Streets are to be designed to perform their diverse roles, in a manner that balances the needs of existing and future users.

8. Public Realm Improvement

New development and redevelopment shall enhance the appearance and function of adjacent streets and open spaces by providing:

a) improvements to adjacent boulevards and sidewalks that include such sustainable design elements as trees, shrubs, hedges, plantings or other ground cover, permeable paving materials, street furniture, curb ramps, waste and recycling containers, lighting, and bicycle parking facilities;
b) coordinated landscape improvements in setbacks to create attractive transitions from private to public realms;
c) weather protection such as canopies and awnings;
d) landscaped open space within the development site;
e) landscaped edges of surface parking lots along streets, parks and open spaces to define the street edge and visually screen parked automobiles;
f) safe pedestrian routes and tree plantings within parking lots; and
g) public art, where the developer agrees to provide this, to make the building and its open spaces more attractive and inviting.

9. Street Trees

The City recognizes the environmental, health, safety, aesthetic and heritage values of planting and maintaining trees along urban and rural boulevards, streets, and roadways. The City shall promote and encourage the protection and management of such trees and encourage public authorities and agencies to ensure their preservation when undertaking utility projects and regular maintenance by:

a) protecting and preserving street trees located within road rights-of-way wherever practical;
b) encouraging private landowners to protect and preserve trees located outside of road rights-of-way; and
c) encouraging the planting of trees in boulevards within road allowances in accordance with the City's Tree By-law.