



# Corporate Report

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**DATE:** June 8, 2010

**TO:** Chair and Members of Planning and Development Committee  
Meeting Date: June 28, 2010

**FROM:** Edward R. Sajecki  
Commissioner of Planning and Building

**SUBJECT:** **Green Development Strategy Recommendations**

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- RECOMMENDATION:**
1. That the City of Mississauga Green Development Strategy Phase 3 Report (Executive Summary prepared by Halsall Associates Limited), attached as Appendix 1 to the report from the Commissioner of Planning and Building titled "Green Development Strategy Recommendations", dated June 8, 2010, be received for information;
  2. That a Green Development Task Force be established to implement the proposed "Made in Mississauga" Strategy prepared by Halsall Associates Limited, over the next five years;
  3. That the third-party green rating system, certified LEED - NC Silver, be adopted to guide new private developments; and
  4. That the Stage One Green Development Standards attached as Appendix 2 of this report also be adopted as the benchmark, to affect new private developments.

**BACKGROUND:** In May 2008, the Planning and Building Department hosted a workshop involving a broad representation of stakeholders to discuss the parameters and principles required to develop a "Made in Mississauga" Green Development Strategy (GDS).

In October 2008, the Environmental Advisory Committee passed a recommendation (EAC-062-2008) which was subsequently recommended by the General Committee and adopted by City

Council (GC-0784-2008), directing the Planning and Building Department to report back with possible incentives that the City could offer developers to incorporate "green" components into their developments.

In February 2009, the Planning and Building Department retained Halsall Associates Limited to assist in the preparation of a Strategy to influence new development to be more environmentally sensitive and sustainable.

The Planning and Building Department presented the GDS recommendations to EAC on April 6, 2010, and received Committee endorsement with comments to strengthen the Strategy in preparation for the June 2010 presentation to City Council.

**COMMENTS:**

The Consultant completed a 3-phase strategy study which included the following:

- **Information Gathering, Review and Preliminary Report** – comprising a discussion of the relevant environmental and sensitivity issues, drivers, regulatory tools, and case studies from cities around the world, particularly North American cities.
- **Consultation Workshop (June 16, 2009)** – involving key public and land development stakeholders along with representatives from other stakeholder groups and agencies to create a feasible Strategy framework.
- **Final Green Development Strategy Report** – entailing the preparation of a report by the Consultant recommending a comprehensive Green Development Strategy, including green standards, policies, incentive programs, and communication and education approaches for stakeholders, to be implemented over a five year period.

In October 2009, Halsall Associates submitted the "City of Mississauga Green Development Strategy Phase 3 Report" for Planning and Building staff to review (Appendix 1). Following its submission and review, City staff conducted an internal workshop in December 2009 to formulate the initial set of green development

standards that could be achieved immediately through the review of development applications (see Appendix 2 - Stage One Green Development Standards).

In order to move boldly and quickly towards becoming a leading sustainable community in the region, City Council demonstrated its commitment through the Strategic Plan Visionary Action of transforming Mississauga to a net-zero carbon city. Green development throughout Mississauga is a significant action towards achieving this goal. Sustainability is defined by the United Nations Brundtland Commission on the Environment and Development as "*...development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*"

Specifically, Sustainable Development is defined as, "*...carefully designed and implemented development that co-exists with the surrounding environment without causing a significant shift in the existing balance of the natural ecological processes.*"

### **The Planning Act - Bill 51**

In addition to already established municipal regulatory tools, Bill 51 introduced amendments to the Planning Act, enabling municipalities to further establish a framework to pursue sustainability in carrying out land use planning and evaluating development applications. The following are examples of the planning mechanisms available to municipalities:

- **Community Improvement Plans** to help achieve sustainability objectives such as energy efficiency, water conservation and district and renewable energy;
- **Site Plan Control** which provides the City authority to require conditions of approval related to sustainability, including energy conservation, the treatment and performance of building exteriors, and design features within municipal highways adjacent to development sites;
- **Payment-in-Lieu of Off-Street Parking (PIL) Agreements** exempting owners from meeting certain parking requirements

in exchange for payment into a municipal reserve fund, thereby, providing additional opportunities/incentives for green development;

- **Processing Official Plan, Zoning and Subdivision Applications** which allows municipalities to request prescribed information and additional required information regarding land use efficiency and conservation of energy;
- **Bonus Zoning** which allows for consideration of increases in height and/or density in development in exchange for securing specific amenities that benefit the City. The City can choose to use bonus zoning to provide opportunities/incentives for green development; and
- **A Development Permit System** which consolidates development approval processes including Zoning, Site Plan and Minor Variance approvals into a single process. The process can be designed to require developers to address issues of sustainability within their projects and on adjoining public streetscapes.

### **Current Initiatives Underway**

Numerous green initiatives are underway in Mississauga, some far reaching in scope, such as the Bus Rapid Transit Line, Hurontario Higher Order Transit Study, Transportation Master Plan, Stormwater Control Strategy Update, the Credit River Water Management Study, Park Naturalization Programs, Cycling Network and Implementation Plan Strategy, Mississauga Official Plan, Credit Valley Conservation Authority and Toronto Regional Conservation Authority joint publication of the "Low Impact Development Stormwater Management Planning and Design Guide", Downtown 21 Master Plan, and the soon to be undertaken City-wide Living Green Master Plan.

All include significant sustainable design technologies and best practices, however, three initiatives, in particular, stand out:

1. The Draft Mississauga Official Plan is a comprehensive document that consistently links the Strategic Plan "Green

Living" Pillar for Change principles, and actions with transportation, environmental and urban design policies throughout the document. This will ensure that the new developments and infrastructure and community projects meet corporate objectives.

2. The Credit Valley Conservation Authority, together with the Toronto Regional Conservation Authority (TRCA), have developed a Sustainability Manual, "Low Impact Development Stormwater Management Planning and Design Guide", that both educates and provides implementation direction on how to select, design and construct sustainable stormwater practices on a site-by-site basis. It is a useful document that City staff, the private sector, and the public in general would find user-friendly to understand, and to implement "green" stormwater technologies.
3. The Downtown 21 Master Plan Study also addresses the principles and actions identified in the Strategic Plan's "Living Green" Pillar for Change, by recommending a greener, more sustainable future for the downtown. With a potential of showcasing the best sustainable design and practices, the first phases of development in the new Downtown Plan will be identified as a pilot project area, where significant green initiatives would be expected from all development applications.

Initiatives continue to emerge from the private sector. Many private developers now include sustainable technologies and strategies as their "business as usual" approach. Partners in Project Green, initiated in 2008 by the Greater Toronto Airport Authority (GTAA) and TRCA, includes a consortium of companies committed to working together to ensure that all existing buildings and sites located within the "Pearson Eco-Business Zone" include sustainable interventions. Their belief is that economic benefits increase exponentially when partnered with other businesses and the greater community.

### **The LEED Rating System**

The Leadership in Energy and Environmental Design (LEED), Green Building Rating System, a third-party certification program

and an internationally accepted benchmark for the design, construction and operation of high performance green buildings and neighbourhoods, was developed in 1998 by the United States Green Building Council (USGBC). Since its inception, LEED has grown to encompass more than 14,000 projects in 30 countries worldwide. From 1994 to 2006, LEED grew from one standard for new construction to a comprehensive system of six standards covering all aspects of the development and construction process. In 2003, the Canada Green Building Council (CaGBC) received permission to create its own version of LEED, called LEED Canada-NC. NC refers to buildings under "new construction" but also includes those undergoing major renovation.

The LEED rating system is not new to Mississauga. Many developers have already used the rating system for their developments to strive for longer term cost savings, especially in energy efficiency, and also for marketing, as a tool for attracting "green conscientious" customers and clients to their developments. To date, there are 38 projects that have either been certified or registered in the LEED program (See attached as Appendix 3: List of LEED Buildings in Mississauga).

City staff continue to encourage applicants to include green elements in new developments whenever opportunities arise. Many small initiatives have been achieved through this informal process. However, without the formal backing of City Council for a strategy, staff must rely on the applicants' personal willingness to achieve the City's broader objectives in sustainability.

### **Green Development Strategy (GDS)**

The GDS advocates that private new development will include best sustainable technologies and practices, as part of their development approval process, which is already fast becoming the new standard of practice for development in the region. The strategy affects site works, building design and construction methods that best contribute to the City's sustainability priorities. The strategy also aligns with the "Mississauga Green Building Standard for Municipal Buildings", which aspires to LEED Silver certification. Development applications for single and semi-detached dwellings

are exempt from the Strategy, as they are generally not subject to Site Plan Control.

### **The Consultant's Report**

The Consultant's City of Mississauga GDS Phase 3 Report discusses numerous sustainable practices, including standards, performance based targets, the need for leadership, incentives, pilot projects and education. It also emphasizes the need for identifying measures, technologies and practices when compared with the "business as usual" approach – to significantly reduce energy demand and consumption, increase renewable energy capacity, decrease the impact to the natural environment (water, air and soil), and enhance the communities well-being along with other environmental policies. See attached, Appendix 1 – City of Mississauga Green Development Strategy Phase 3 Report (Executive Summary), for the Consultant's complete list of recommendations.

The "Made in Mississauga" GDS considers the City's climate, geography and civic infrastructure in order to achieve its environmental objectives. Once implemented, the Consultant's comprehensive and far reaching recommendations will go beyond any other municipal green development initiative undertaken in the region today. Notwithstanding, municipal strategies that address the greatest number of environmental drivers tend to be more successful. The drivers considered most relevant to Mississauga are as follows:

- Protect, Enhance and Restore Natural Areas
- Provide Green Space
- Create Effective Urban Structure
- Reduce Greenhouse Gas (GHG) Emissions
- Manage Stormwater

### **The Consultant's Recommendations**

The City of Mississauga GDS Phase 3 Report lists 36 recommendations for the City to consider in moving forward on developing its "Made in Mississauga" Strategy (see Appendix 1 for a complete list of 36 recommendations). Eight key

recommendations have been identified from this list that will require a detailed review over a five year period prior to full implementation. The key recommendations are as follows:

1. ***Demonstrate Political Leadership and Commitment***

Many in Mississauga champion the initiative including City Council, the City's Leadership Team, the Environmental Advisory Committee, public groups, staff and private sector individuals, all dedicated to achieving a successful implementation of City-wide sustainability practices. The City's Green Building Standard for municipal buildings demonstrates leadership and commitment to its Strategic Plan; the City now asks the private sector to follow suit.

2. ***Establish a Green Development Task Force***

Create a Green Development Task Force consisting of key City staff and industry experts, responsible for overseeing the implementation and long term maintenance of the Strategy. Clear lines of communication need to be established between the Task Force, the Planning and Building Department (those administering the rollout of this initiative), and the Champions of green development.

3. ***Interim LEED Silver Certification and Stage One Green Development Standards***

Adopt the LEED rating system with Silver certification as the benchmark for new development to strive for, while the Green Development Task Force reviews existing by-laws, policies, guidelines and other elements recommended in the Strategy.

Secondly, adopt the Stage One Green Development Standards (see Appendix 2) providing reasonable targets that can be met through Site Plan Control to kick start the implementation of the Strategy.

4. ***Utilize existing planning tools, along with City and third-party targets when implementing mandatory requirements***



Utilize existing Official Plan policies, guidelines and by-laws to communicate targets and requirements instead of reproducing requirements as non-aligned "stand-alone" standards. Furthermore, the City's new Draft Official Plan contains specific transportation, environmental and design policies that clearly align with principles and actions stated in the Strategic Plan.

#### 5. *Incent best practice*

Use incentives to achieve performance targets that greatly exceed "business as usual" practices, but are outside of Mississauga's regulatory framework. The following incentives are discussed in more detail below:

- ***Awards***  
Present recognition awards to projects that demonstrate exemplary performance and meet high standards in green development as an alternative to monetary awards (i.e., the Mississauga Urban Design Awards).
- ***Fee-bates***  
Consider a self-sustaining fee-base system with a three-tiered financial incentive mechanism, requiring a fee from conventional/non-innovative development proposals, a fee waiver for developments with moderate green improvements, and a reward for those that incorporate high performance green innovations as a means to voluntarily stimulate best practices.
- ***Tiered-tracking Approval Process***  
Consider a tiered-tracking system (i.e., a two-track system) approval process that prioritizes building permit reviews and site plan approvals for projects that meet certain green building standards. In some cases, establish eligibility criteria to allow for streamlining the review of green projects.
- ***Bonusing Opportunities***  
Consider bonusing provisions contained in the *Planning Act* such as increased height and/or density, to secure

sustainability in new developments over and above traditional planning tools. The Bonusing Study currently underway should be reviewed in conjunction with the GDS.

- ***Green Loans***

To overcome the disparity to build green, the City of Mississauga may consider financing for high performance, energy efficient systems for buildings (i.e., Toronto Atmospheric Fund available to condominium developers).

6. ***Establish Pilot Projects***

Identify pilot projects of varying scales, sizes and scopes (i.e., large site-multiple lots, and large district-major multiple ownership such as the Lakeview District, the Hurontario Higher Order Transit Corridor and the Downtown area Main Street.

7. ***Ensure Ongoing Success***

Treat the GDS as a "living" initiative that will continue to evolve and improve. Provide information resources to the development industry and general public, train municipal staff to be knowledgeable, and develop a resource/education centre and website.

8. ***Timelines***

Adopt the Consultant's proposed five year plan as the time table for implementing the recommendations. After two years, a solid Strategy foundation will be set. After five years, most elements will be incorporated into the City's planning process in a manner that it will be seen as "business as usual".

**Next Steps**

The next steps required to develop an implementable Green Development Strategy to guide new private development in the City are as follows:

- Immediately implement the Stage One Green Development Standards set out in Appendix 2;
- Adopt LEED-NC Silver certification as the minimum standard developers must strive to achieve for key master planned communities and mainstreets such as OPG Lands, the Hurontario Corridor and the Downtown "Main Street". LEED-NC Silver certification will be promoted for all other developments across the City;
- Establish a Green Development Task Force consisting of key internal City staff and industry experts to drive the implementation and the maintenance of the Strategy over that period; and
- The Green Development Task Force will report back to the City's Leadership Team with a project charter that identifies key stages and sets goals and confirms timelines to roll out the strategy.

**STRATEGIC PLAN:**

In May 2009, the City introduced the new Strategic Plan "Our Future Mississauga" and its 40 year plan that identifies actions to mitigate climate change and environmental issues associated with the urbanization of the city, in order to meet its target of becoming net-zero carbon neutral.

The Green Development Strategy addresses key principles from the City's new Strategic Plan, specifically Action 3 of the Living Green Strategic Pillar for Change, which states; *"Develop a Green Development Standard Strategy that addresses resource consumption and pollution emissions"*.

**FINANCIAL IMPACT:**

The City's financial commitment expected from the implementation of the GDS will be incremental over five years. In the first year, the Strategy components that would require some financial commitment are as follows:

- establishment of a Resource Centre;
- development of education seminars; and
- awareness and promotional material.

These elements will help encourage green development within the development industry, along with informing the general public on the initiative. The funding required for 2011 in order to facilitate the first stage of developing these elements would be \$5,000.00, which will need to be built into the departmental base budget.

**CONCLUSION:**

The intent of this Green Development Strategy is to influence site works and building design and construction methods occurring in private, new and infill development. In the interim, while green development policies, standards, guidelines and by-laws are developed and implemented through the Green Development Task Force mandate, the City should use the already familiar Canada Green Building Council's LEED-NC Silver Rating System as the method for achieving best sustainability practices in technologies on a voluntary basis, encouraging LEED Silver certification. Further requirements identified in the Stage One Green Development Standards, attached as Appendix 2, will provide additional guidance for private new development.

Implementing the Green Development Strategy is a critical step in addressing the City's Strategic Plan which includes a commitment to become a net-zero energy community within 40 years.

**ATTACHMENTS:**

- Appendix 1 – City of Mississauga Green Development Strategy Phase 3 Report (Executive Summary)
- Appendix 2 – Stage One Green Development Standards
- Appendix 3 – List of LEED Buildings in Mississauga

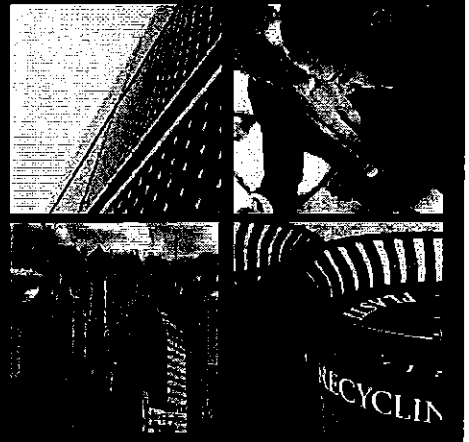
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Edward R. Sajecki  
Commissioner of Planning and Building

*Prepared By: Michael Karowich, Urban Designer/Project Leader*

CITY OF MISSISSAUGA  
GREEN DEVELOPMENT STRATEGY  
PHASE 3 REPORT

October 14, 2009



CITY OF MISSISSAUGA  
**GREEN DEVELOPMENT STRATEGY**  
PHASE 3 REPORT

## EXECUTIVE SUMMARY

This report provides recommendations on how Mississauga can develop and implement a Green Development Strategy to ensure that new development proposals address sustainable development practices. The recommendations provide a multi-faceted approach that Mississauga can take to encourage green development through performance-based targets, leadership, incentives, pilot projects, and education.

A successfully implemented Green Development Strategy would provide numerous environmental, social, and economic benefits for Mississauga by:

- Improving the air, water, and land of the city while reducing greenhouse gas emissions through efficiency and building- and transportation-related best practices;
- Improving the health and well-being of the residents of Mississauga, making the City a more desirable place to live;
- Reducing the demand on municipal services;
- Providing a marketplace shift and raising the bar of the building industry to adopt green development practices; and
- Attracting leading edge businesses.

This report builds upon the work that was completed in the Phase 1 Preliminary Report, including an evaluation of the lessons that other municipalities have learned in developing and implementing their own green development strategies. Along with the feedback that was gathered from relevant Mississauga stakeholders during a workshop that took place in June, 2009, this helped inform a "Made in Mississauga" approach to green development.

The recommended "Made in Mississauga" approach incorporates the successes, while trying to mitigate the shortfalls, of green development strategies implemented across North America. The resulting Strategy will focus on issues important to Mississauga ("drivers") and be directly incorporated within the City's planning and development process.

The recommendations go beyond implementing existing third party standards, which do not necessarily effectively address Mississauga's drivers and development processes. Based on precedent research, no other green development strategy incorporated all elements within these recommendations, but those who addressed the greatest number of similar recommendations were typically more successful.

The Federation of Canadian Municipalities may provide funding for developing and/or implementing some or all elements of the Strategy. Their website should be consulted prior to proceeding with Strategy development to assess current funding opportunities and requirements.

The recommendations outlined below are presented in more detail within this report. A phased implementation approach is recommended to build and continue momentum; a suggested timeline is included in this report.

CITY OF MISSISSAUGA  
**GREEN DEVELOPMENT STRATEGY**  
PHASE 3 REPORT

### **LEADERSHIP FROM CITY COUNCIL**

Leadership and commitment demonstrated by City Council can strongly motivate City employees and private industry to consider green development and help to ensure the successful implementation of the GDS and provide visible credibility to those in the private sector.

1. Have a political as well as a community or industry champion
2. Demonstrate clear commitment
3. Establish a Green Development Task Force

### **PERFORMANCE-BASED TARGETS**

Developers should be provided with clear, performance-based, green development targets, which are embedded directly in by-laws, policies, and guidelines, rather than creating a stand-alone Green Development Standard document.

4. As an interim step before targets and incentives are developed, encourage the use of LEED® and interim standards during the site plan review process
5. Avoid non-measurable targets
6. Rely on existing regulatory and planning tools for implementing mandatory requirements
7. Rely on existing City (i.e. Living Green Strategic Pillar for Change) and third party (i.e. LEED®) targets
8. Consider general vs. localized targets
9. Incent best practice

### **INCENTIVES**

Providing incentives (monetary and non-monetary) can encourage developers to meet green building criteria that go beyond Mississauga's minimum standards, or to improve performance in areas outside the City's legislative jurisdiction.

#### **Awards**

10. Provide awards and recognition

#### **Feebates**

11. Determine tiered green building requirements
12. Develop a revenue neutral pricing structure for a 'feebate' incentive program
13. Develop the feebate application guidelines and determine how the reward process will be managed

#### **Development Charge Discounts**

14. Determine development charge (DC) discount eligibility criteria
15. Establish a value of the DC discount
16. Consider revisions to the next DC update

#### **Fast-Tracked Approvals**

17. Determine expedited review eligibility criteria
18. Streamline reviews of green development projects
19. Slow the approval process for non-green development projects

CITY OF MISSISSAUGA  
**GREEN DEVELOPMENT STRATEGY**  
PHASE 3 REPORT

**Bonusing Opportunities**

20. Determine bonusing eligibility criteria
21. Establish critical areas applicable for bonusing
22. Define the bonusing application process

**Existing Incentives and Initiatives**

23. Raise awareness of existing incentives and initiatives
24. Provide further support for those interested in incentives

**Green Loans**

25. Conduct research on existing green loan programs
26. Assess funding opportunities for green loans
27. Define green loan eligibility criteria and application process

**PILOT PROJECTS**

Pilot projects can be used to motivate other developers to pursue green strategies. They can also be used to test and refine elements of the GDS before being released to the wider development community.

28. Select suitable pilot project sites (i.e. owned by City to be sold for private development or redeveloped by the City)
29. Incorporate exemplary performance of innovative technologies into pilot projects
30. Market the features and successes of pilot sites

**ENSURING ONGOING SUCCESS**

To be truly successful, the GDS must be treated as an ongoing initiative that constantly evolves and improves. Providing resources to the development industry and general public through knowledgeable municipal staff, education centres, and websites will provide the knowledge capacity necessary to ensure ongoing success. Keeping the GDS current and up-to-date will ensure that it remains relevant to Mississauga's priorities and goals.

31. Provide adequate training for municipal staff
32. Create an education center
33. Provide online resources
34. Plan future Strategy revisions
35. Coordinate effort with existing policies
36. Consider interaction with new policies
37. Expand scope of the Strategy to neighbourhood and community scale

Ideally, after five years of implementation, most elements of the Strategy will be incorporated into Mississauga's planning process such that the Strategy, and its continuous improvements, will be seen as business as usual. This will put Mississauga in place to be recognized as a leader in municipal green development.



CITY OF MISSISSAUGA  
**GREEN DEVELOPMENT STRATEGY**  
PHASE 3 REPORT

Ideally by year five, most elements will be incorporated into Mississauga's planning process such that the Strategy, and its continuous improvements, will be seen as business as usual. This will put Mississauga in place to be recognized as a municipal leader in green development.

	Years				
	1	2	3	4	5+
Define role and select champion and task force (1, 3)	█				
Implement interim Green Development Standard (4)	█				
Determine measures to achieve each driver (5, 6, 7, 8)	█				
Determine existing City targets/requirements for each measure (6)	█				
Identify gaps in existing by-laws, policies, etc. and revise where feasible (6)	█	█			
Define targets and how they will be communicated (5, 6, 7, 8)	█	█			
Develop resources to provide to public (Centre of Excellence, websites) (32, 33)	█	█			
Determine suitable sites and technologies to use for pilot projects (28, 29)	█	█	█		
Determine feasible incentives (11, 14, 17, 20, 25)	█	█			
Set eligibility criteria and pricing for feasible incentives (11, 12, 14, 15, 17, 20, 21, 27)		█			
Develop guidelines for feasible incentives (13, 22)		█			
Provide training to staff (31)		█	█		
Communicate available incentive programs to the public (23)		█	█	█	
Provide support to developers interested in incentives (24)		█	█	█	
Construct pilot projects and report on lessons learned to revise Strategy (28, 29, 30)			█	█	
Provide awards and recognition to development community (10)		█	█	█	
Review and revise Strategy elements to ensure they remain relevant (34)		█	█	█	
Expand scope of the Strategy to neighbourhood and community scale (37)		█	█	█	

**Stage One:**  
**GREEN DEVELOPMENT STANDARDS**

In addition to encouraging private developers to achieve LEED-NC Silver certification, the following standards should also be considered when preparing a Site Plan/Rezoning application.

**GENERAL**

Forms for site plan and re-zoning applications shall identify the “Green Development Standards” listed herein, and describe in detail the extent in which each element considered will be implemented in the development proposal.

**A) On-site Stormwater Retention Technologies**

**GENERAL**

All site plan applications shall incorporate technologies to maximize the natural infiltration and retention of stormwater through site development where appropriate.

**BIO-RETENTION**

Install a bio-retention system to filter and temporarily store, treat and infiltrate rainwater runoff (after a large storm event) to control stormwater quantity and improve its quality prior to release back into the system.

**RAINWATER HARVESTING**

Install rainwater harvesting systems which intercept, convey and store rainfall for future use.

**PERMEABLE PAVEMENT**

Install permeable pavement as an alternative to traditional impervious pavement (i.e., asphalt) with no or little infiltration characteristics to allow rainwater to drain through them and into an aggregate reservoir, preferably for low level traffic on private roads, parking lots, walkways, etc.

**GRASS AND DRY SWALES**

- Install vegetated and open “grass swales” (channels) to receive, treat and attenuate rainwater runoff (also known “enhanced” vegetated swales).
- Promote the use of “dry swales” (an enhanced grass swale that incorporates engineered soil -filter media or growing media) with optional perforated pipe underdrain or a bioretention cell configured as a linear open channel.

**GREEN ROOFS**

- Install “Green-living roofs”-a layer of growing medium soil and vegetation on top of a conventional flat or sloped roof- where possible, to improve energy efficiency in buildings, stormwater absorption and quality, reduce urban heat island effects, and create green space for passive recreation or aesthetics. There are two types of green roofs; intensive (with aesthetic and environmental value) and extensive (with active recreational uses) .
- Intensive- roofs planted with deeply rooted plants and have a deeper soil layer (generally greater than 15 cm (6 in) of growing medium in depth, to allow for deeply rooted plants, and

- Extensive- systems on top of roofs consisting of thin layers of soil with herbaceous vegetative cover (generally less than 15 cm (6 in) in depth).

## **B) Soft Landscape Material**

### GENERAL

Plant trees to promote bio-diversity, improve air quality, reduce the urban heat island effect, and increase the aesthetic value within the area.

### NEW TREES

- For groups of trees 2 or more, plant in primarily hard-scaped areas and provide a minimum of volume  $15 \text{ m}^3$  (530  $\text{ft}^2$ ) of high quality soil per tree. A single tree planted in hard-scape requires a minimum volume of  $30 \text{ m}^3$  (1060  $\text{ft}^2$ ) of soil.
- Provide trees planted in soft-scape with a minimum volume of  $30 \text{ m}^3$  (1060  $\text{ft}^2$ ) high quality soil.
- Plant “shade trees” approximately 6-8 m (20-27 ft.) apart along all street frontages, open space frontages and public walkways.

### NATIVE VEGETATION

Ensure that a minimum of 50% of all proposed plantings are of native species.

## **C) Pedestrian and Cycling**

### PEDESTRIAN WALKWAYS

Design private sidewalks, crosswalks and walkways to be continuous, universally accessible, barrier free and clearly designated. Connect buildings entries to off-site pedestrian paths, transit stops and parking areas (car/ bicycle).

### PEDESTRIAN COMFORT

- Locate all air-exhaust systems and air-intake grates away from pedestrian routes and amenity areas.
- Provide shade trees along pedestrian pathways and in amenity spaces for summer shade.

### BICYCLE PARKING

Locate 50% of occupant bicycle parking in a secure weather-protected area contained within the development site.

## **D) Exterior Building Design**

### **BIRD FRIENDLY GLAZING**

- Treat glass with a density pattern between 10-28cm (4-11 in) apart for a minimum of the first 10-12m (33-40 ft) of a building above grade,

or

- Mute reflections for a minimum of the first 10-12m (33-40 ft) of a building above grade. Where a green roof is constructed that is adjacent to glass surfaces; ensure that the glass is treated to a height of at least 12m (40 ft) above the level of the green roof to prevent potentially fatal collisions with windows.
- Where exhaust/ventilation grates can not be avoided at ground level the grates have a porosity of less than 2cm x 2cm (1in X 1in).

### **SITE & BUILDING LIGHTING**

- Install exterior light fixtures that are shielded to prevent glare and/or light trespass onto any neighbouring properties.
- No up-lighting from exterior light fixtures on buildings unless they are designated as a heritage structure.

**List of LEED Buildings in Mississauga**

Updated: April 19

The following three lists below are of buildings in Mississauga that have either been certified or registered in the Leadership in Energy and Environmental Design (LEED) program. The LEED program includes a variety of building categories such as, New Construction (NC), Existing Building (EB), Core and Shell (CS) and Commercial Interiors (CI).

LEED is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings. The LEED NC program promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health:

- sustainable site development
- water efficiency
- energy efficiency
- materials selection
- indoor environmental quality

Certification is based on the total point score achieved, following an independent review and an audit of selected Credits. The program has four possible performance levels of certification:

- Platinum: 52 points or more
- Gold: 39 – 51 points
- Silver: 33 – 38 points
- Certified: 26 – 32 points

The LEED NC program has a maximum of 70 points.

**Certified LEED Buildings - New Construction/Existing Building/Core and Shell**

- 1) The Hazel McCallion Academic Learning Centre, University of Toronto at Mississauga, Library, 3359 Mississauga Road North, LEED NC 1.0, **Silver Level**
- 2) GE Meadowvale Corporate Headquarters, 2300 Meadowvale Blvd., LEED EB 2.0 **Certified Level**
- 3) 7150 Derrycrest Drive, Mississauga, GWL Realty Advisors Inc., LEED CS 2.0, **Gold Level**
- 4) 6897 Financial Drive, Bentall Real Estate, LEED CS 2.0 **Gold Level**

Registered LEED buildings are participating in the program, but have not received final third party certification or performance level designation.

**Registered LEED Buildings - New Construction and Core and Shell**

- 1) Sheridan College - Mississauga Campus, Lecture Hall/Classroom
- 2) UTM Instructional Centre Complex, Lecture Hall/Classroom
- 3) Garry W. Morden Fire Training Centre, 7535 Ninth Line
- 4) AeroCentre-V, 5500 Explorer Drive, Office building
- 5) Lakeview WTP Phase 2 Expansion – Administration, 920 East Avenue, Maintenance and 2 storey office building
- 6) Hatch Office Building, 2725 Speakman Drive, Office building

- 7) UTM Medical Academy Lecture Hall/Classroom, 3359 Mississauga Road North
- 8) Canada Masonry Center, 360 Superior Blvd, 2 Storey mixed-use building
- 9) Credit Valley Conservation Authority, 1255 Old Derry Road, Office building expansion
- 10) First Meadowvale Corporate Centre, 2465 Argentia Road, 10 Storey office building
- 11) Collette Vacations, 34 Pearl Street, Office building
- 12) Hilton Garden Inn Hotel, Caroga Drive, 15 Storey hotel
- 13) GO Transit Streetsville Bus Facility, 6190 Mississauga Road
- 14) North Shore Condominium Residences, 15 Hurontario Street, 22 Storey multi-unit residential
- 15) 2699 Speakman Drive, 4 Storey office building
- 16) Trillium Health Centre, 15 Bronte College Court, 7 Storey office building
- 17) 5750 Explorer Drive, 5 Storey office building
- 18) Origin Evergreen Condominium Tower B, 810 Scollard Court, Seniors high-rise multi-unit residential
- 19) 2050 Derry Road West, GWL Realty Advisors Inc., LEED CS 2.0
- 20) 2100 Derry Road West, LEED CS 2.0
- 21) 2360 Meadowpine Blvd, LEED CS 2.0
- 22) 6897 Financial Drive, Bentall Real Estate, LEED CS 2.0
- 23) Manulife Corporate Park, Phase 4, 6777 Mississauga Road, LEED CS 2.0
- 24) Meadowpine Development, 2550 Meadowpine Blvd., LEED CS 2.0
- 25) 6750 Century Avenue, Office building, LEED CS 1.0
- 26) ProLogis Britannia, 1600 Britannia Road E, Industrial/Manufacturing, LEED CS 1.0
- 27) First Meadowvale Centre Phase 2, 10 Storey Office Building, Century Avenue, LEED CS 1.0
- 28) 7125 Mississauga Road, 5 Storey Office Building, LEED CS 1.0

#### Registered LEED - Commercial Interiors

- 1) St. Jude Medical Canada Inc., 2100 Derry Road, Office building
- 2) Penncorp Life Insurance Co., 7150 Derrycrest Drive, Office building
- 3) BD LEED CI, 2100 Derry Road East, Office building
- 4) UTM - South Building, 3057 Mississauga Road North
- 5) Air Miles Reward Program Call Centre, 6696 Financial Drive, Unit 1, Office building
- 6) Sandvik Cormorant Corporate Headquarters, 2550 Meadowpine Blvd, Office building.