Urban Design Standards









Green Development Standards

July 2010
Updated October 2014

MISSISSAUGA

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Introduction

1 Introduction

1.1 Purpose

In response to City Council direction, this brochure outlines Stage One Green Development Standards that applicants will need to consider when preparing their site plan and rezoning applications prior to development approval.

All site plan applications will be required, where appropriate, to incorporate technologies that maximize Stage One Green Standards:

- Low Impact Development (LID) Stormwater Retention
- Soft Landscape Materials
- Pedestrian and cycling comfort
- Exterior building design applications
- LEED-NC requirements

Pedestrian through-block connection

Example of soft landscape materials

Example of grass filter strip before landscape swales

290 East Avenue, Mississauga LEED-NC gold certified

Bio-retention island in parking area

1.2 Preface

On July 7, 2010, City Council adopted the Green Development Strategy, which focuses on achieving sustainability and environmental responsibility in new development in Mississauga. The following key recommendations are now being implemented:

- a Green Development Task Force to implement the "Made in Mississauga" Strategy over five years;
- the third-party green LEED-NC (Leadership in Energy and Environmental Design for New Construction) certified Silver rating system as a guide for development to follow; and
- the 'Made in Mississauga' Stage One Green Development Standards.

The City strongly encourages applicants to incorporate green sustainable elements into proposed buildings, site works, construction methods and long term maintenance programs. Further to the Stage One Standard requirements, the City also asks that applicants pursue LEED-NC credits required to achieve Silver certification.

For more information, visit the Canada Green Building Council for the LEED-NC program, Sustainable Technologies for the Low Impact Development Stormwater Management Planning and Design Guide, and the City of Mississauga for the Green Development Strategy websites found on the last page of this brochure.

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Low Impact Development (LID) Stormwater Retention

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Low Impact Development Stormwater Retention

Throughout this brochure, the commonly known term, Low Impact Development (LID), is generally used. However, in some cases, these technologies have also been referred to as “Stormwater Best Management Practices”.

The term “Low Impact Development” is commonly used to describe the technologies employed to retain stormwater on site. The City of Mississauga further defines such techniques as “Stormwater Best Management Practices” .

There are several different methods that can be used. These include but are not limited to:

- Bio-Retention
- Rainwater Harvesting
- Permeable Pavement
- Grass Dry Swales
- Green Roofs

2.1 Bio-Retention

Bio-Retention systems 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.

Bio-swales at Riverwood, Mississauga

2.2 Rainwater Harvesting

Rainwater harvesting systems intercept, convey and store rainfall for future use.

Typical underground storage tank

Typical rain water barrel

2.3 Permeable Pavement

Permeable pavement is an alternative to traditional impervious pavement (i.e., asphalt) with little or no infiltration characteristics, that allows rainwater to permeate through it and into an aggregate reservoir. This is ideally suited for areas with low level traffic such as private roads, parking lots, walkways, etc. “Pervious Stable Surface” may also be used to identify areas for permeable ‘interlocking’ concrete paving, pervious concrete or porous asphalt.

Examples of permeable asphalt draining into bio-swale

2.4 Grass and Dry Swales

Vegetated and open “grass swales” (channels) receive, treat and attenuate rainwater runoff (these are also known as “enhanced” vegetated swales).

“Dry swales” are an enhanced grass swale that incorporates engineered soil filter media or growing media with optional perforated pipe underdrain or a bio-retention cell configured as a linear open channel.

Example of enhanced dry grass swale

2 LID Stormwater Retention

2.5 Green Roofs

Green-living roofs consist of a layer of growing medium soil with vegetative material on top of a conventional flat or sloped roof. Green Roofs improve energy efficiency in buildings, stormwater absorption and quality, reduce urban heat island effects, create green space for passive recreation, and enhance roof aesthetics. There are two types of green roofs: intensive - providing aesthetic and environmental value, and extensive - or active recreational uses:

- Intensive roofs have a deep soil layer, generally greater than 15 cm (6 in) of growing medium in depth to allow for the planting of deeply rooted plants.
- Extensive systems on top of roofs consist of thin layers of soil with herbaceous vegetative cover, generally less than 15 cm (6 in.) in depth.

For further details on the LID techniques found in this brochure (including others that have not been identified, such as downspout disconnection, soakaways, trenches, vegetated filter strips, enhanced grass swales and perforated pipe systems), see the CVC/TRCA Sustainable Technologies for the Low Impact Development Stormwater Management Planning and Design Guide available on-line (see link on page 22).

"Intensive" Green Roof sits on parking structure at Mississauga Civic Centre

City Gate Condominiums, Mississauga

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Soft Landscape Material

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Soft Landscape Material

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

3.1 New Trees

For groups of two or more trees planted primarily in hardscape areas, a minimum volume of 15 m^3 (530 ft^3) of high quality soil is required per tree. A single tree planted in hardscape requires a minimum volume of 30 m^3 (1060 ft^3) of soil.

- Trees planted in softscape need a minimum volume of 30 m^3 (1060 ft^3) high quality soil.
- "Shade trees" are to be planted approximately 6-8 m (20-27 ft.) apart along all street frontages, open space frontages and public walkways.

3.2 Native Vegetation

Ensure that a minimum 50% of all proposed plantings are native species, where feasible

Examples of landscaped planting in Street boulevards

Example of grass swale between parking lot and building

Example of landscape planting surrounding parking ventilation grate

New street trees planted in grass

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Pedestrian &Cycling Comfort

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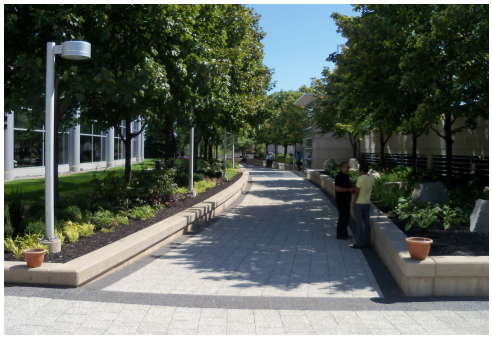
Pedestrian and Cycling Comfort

4.1 Pedestrian Walkways

Private sidewalks, crosswalks and walkways should be designed to be continuous, universally accessible, barrier-free and clearly designated. Building entries should connect to pedestrian paths, transit stops and parking areas for both cars and bicycles.



Walkway in green space

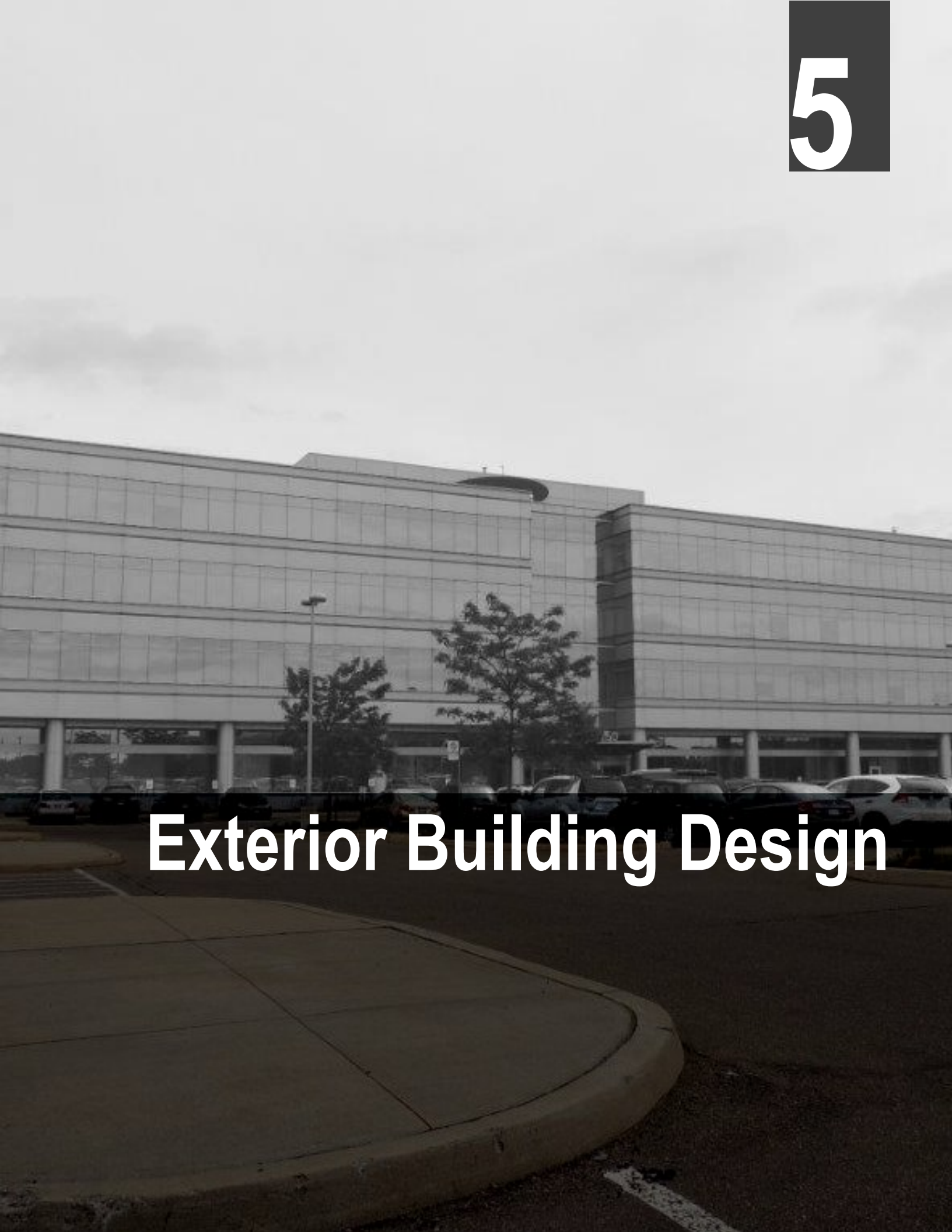
4.2 Pedestrian Comfort

- All air exhaust systems and air intake grates are to be located away from pedestrian routes and amenity areas.
- Shade trees should be provided along pedestrian pathways and in amenity spaces to take advantage of summer shade.

4.3 Bicycle Parking

- 50 percent of occupant bicycle parking should be located in a secure weather-protected area contained within the development site.

Example of bike storage facility in an underground garage



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Exterior Building Design

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Exterior Building Design

5.1 Bird Friendly Glazing

- Glass on buildings should be treated with a density pattern between 10-28 cm (4 to 11 in.) apart for a minimum of the first 10 to12 m (33-40 ft.) above grade,

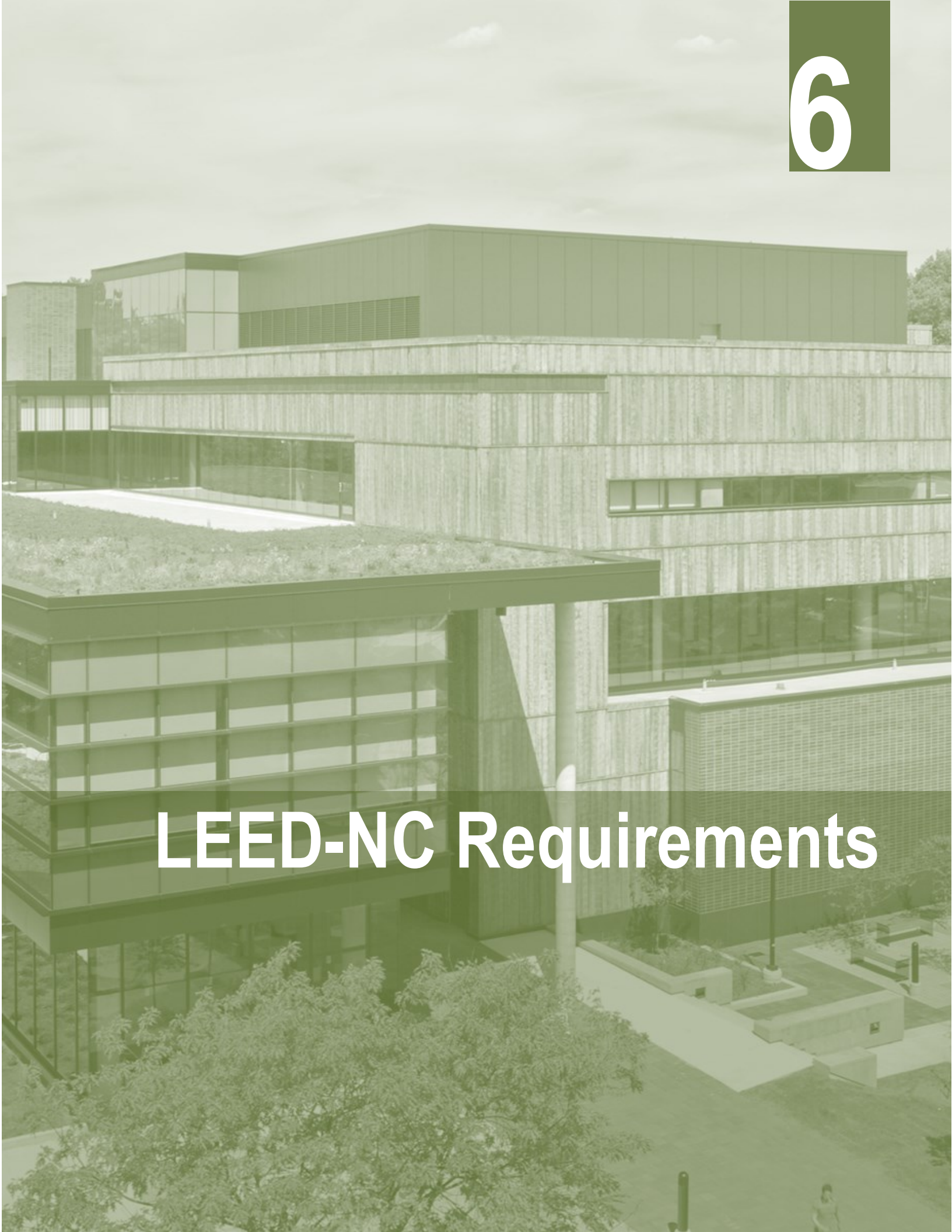
OR

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

Example of Bird-Friendly Glazing, Sheridan College, Mississauga

5.2 Site and Building Lighting

- Exterior light fixtures should be properly shielded to prevent glare and/or light to trespass onto any neighboring properties.
- Up-lighting from exterior light fixtures mounted on buildings should be avoided unless they are designated as an integral component of a heritage structure.



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LEED-NC Requirements

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LEED-NC Requirements

The City of Mississauga promotes sustainability for new developments, and now requests that development applicants achieve LEED-NC (Leadership in Energy and Environmental Design) Silver Certification for 'New Construction' . The LEED Green Building Rating System encourages sustainable green building and development practices through the creation and implementation of universally understood tools and performance criteria. The Canadian LEED system is tailored specifically for Canadian climates, construction practices and regulations.

LEED is an internationally accepted third-party certification program and benchmark for the design, construction and operation of high performance green buildings. LEED provides building owners and operators with the tools they need to have an immediate impact on their buildings' performance. It promotes a holistic approach to sustainability by considering performance in sustainable site development, water efficiency, energy efficiency, materials selection, and indoor environmental quality regarding human and environmental health.

Silver Certification is achieved by scoring 50-59 credits (of a possible 100 base credits, six innovative design and 4 regional priority points) which is assessed by a LEED accredited third party. With four possible levels of certification (Certified, Silver, Gold and Platinum), LEED is flexible enough to accommodate a wide range of green building strategies that best fit the context of a particular site and/or project.

The following examples are LEED certified buildings in Mississauga:

Redcliff Realty Advisors Inc., 5750 Explorer Drive, Mississauga, LEED-NC Silver Certified

Hazel McCallion Academic Learning Centre, University of Toronto, Mississauga, LEED-NC Silver Certified

2050 Derry Road W, Mississauga, US Green Building Council, LEED-Core & Shell Gold Certified

Instructional centre, University of Toronto Mississauga,
3359 Mississauga Road, LEED-NC Silver Certified

Commercial office building, 6897 Financial Drive, Mississauga
US Green Building Council LEED-Core & Shell Gold Certified

Garry W. Morden Centre,7535 Ninth Line, Mississauga, LEED-NC Silver Certified

2100 Derry Road W., Mississauga
US Green Building Council LEED-Core & Shell Gold Certified

290 East Avenue, Mississauga
LEED-NC Gold Certified

Links

For more information on LEED-NC (Leadership in Energy and Environmental Design, New Construction), see the following link:

http://www.cagbc.org/Content/NavigationMenu/Programs/LEED/CommercialInstitutional/RatingSystems/NewConstruction/default.htm

For Credit Valley/Toronto Regional Conservation Authority–Low Impact Development Stormwater Management Planning and Design Guide, see the following link:

http://www.creditvalleyca.ca/low-impact-development/low-impact-development-support/stormwater-management-lid-guidance-documents/low-impact-development-stormwater-management-planning-and-design-guide/

For City of Mississauga Green Development Strategy on both the Living Green and Planning & Building homepages, see the following links:

www.mississauga.ca/portal/discover/ourfuturegreen

or

www.mississauga.ca/portal/residents/planningandbuilding

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