



WATERFRONTToronto

Waterfront Toronto

Mandatory Green Building Requirements

November 2009



Mandatory Green Building Requirements

SUMMARY TABLE – November, 2009

Requirement	Number	Description and Reference for Requirements 1 to 10
Experienced Team	1	All development teams must be experienced in creating high-performance, green buildings.
Integrated Design Process	2	An integrated design process (IDP) is a formalized process that must be used by the developer to ensure that developer/design teams work collaboratively to set targets, share knowledge and test design ideas early in the design process.
District Energy	3	Construct all buildings to rely on Waterfront Toronto's district energy system and on-site renewable energy sources.
LEED Gold Certification	4	All eligible buildings must achieve a minimum of LEED Gold certification as defined in LEED Canada-NC Version 1.0. ¹
a) Credit EAc1 Optimize Energy Performance		a) All buildings must obtain a minimum of 4 points under EAc1 Optimize Energy Performance by achieving a 40% reduction in design energy cost relative to MNECB with a preferred target of 60% or better.
b) Credit EAc5 Measurement and Verification		b) Install continuous metering equipment to measure and verify the required information (as per LEED) at the building level. The required information is given by LEED Canada NC v 1.0 application guide for multi-unit residential buildings.
Minimum Energy Use	5	The following energy conserving initiatives must be implemented:
a) Use Energy Star Appliances		All Energy-Star eligible appliances (such as refrigerators and dishwashers) that are supplied by the developer must be Energy-Star rated.
b) Meter Energy and Water Consumption at Each Suite		Provide the necessary infrastructure to allow sub-metering or direct metering of domestic water (hot and cold separately), heating energy, cooling energy and electricity consumption for each dwelling unit or retail/commercial suite.

¹ LEED Green Building Rating System Reference Guide, Canada Green Building Council, December 2004

Requirement	Number	Description and Reference for Requirements 1 to 10
Long Term Flexibility	6	<p>All buildings must be developed with the floor to underside of floor height of:</p> <ul style="list-style-type: none"> • residential space: 2.7m • ground floor space: 5m • above grade parking decks: 2.4m (after leveling the deck)
Green Roofs	7	<p>All buildings over 3 storeys must include vegetated roofs with a minimum total area of 50% of the gross area of the ground floor. 50% of the area of all parking garage roofs not used for parking or roadways must be vegetated.</p> <p>Design 100% of all low slope roofs to accommodate an intensive green roof.</p>
Waste Management	8	<p>All kitchen suites must be designed to have separated cabinet space for segregated collection of waste in three streams:</p> <ul style="list-style-type: none"> • Waste • Recyclables • Organics
Bicycle Parking and Storage	9	<p>All buildings must comply with the bicycle parking and storage requirements outlined in credits SLLc5 and NPDC6 of the LEED ND certification program (USGBC Pilot Version).</p>
Waterfront Toronto Sustainability Progress Tracking System	10	<p>All projects must complete and submit Waterfront Toronto's Sustainability Progress Tracking System to track LEED and Mandatory Green Building Requirement progress.</p>

Mandatory Green Building Requirement No. 1 Experienced Team

Intent

To increase potential for the design and development of high performance, green buildings.

Requirements

The Development Team must include at least one member with each of the following qualifications and experience(s) (see definitions following):

- LEED Accredited Professionals
- Energy Modeler with Commercial Building Incentive Program (CBIP) experience or equivalent
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) member
- Experienced Green Building Design Concept (Charrette) Leader

These qualified individuals cannot be removed from the team without written consent from Waterfront Toronto.

Definitions

A **LEED Accredited Professional** must have working experience with the LEED Rating System and must have earned the LEED Accredited Professional designation by successfully completing one of the exams offered by the Canada Green Building Council or United States Green Building Council.

The **Energy Modeler** must have proven knowledge of the Model National Energy Code (MNECB) and energy simulation through experience using EE4 and EEWizard. The energy modeler must have submitted to Natural Resources Canada (NRCan) a minimum of 3 successful CBIP projects and / or 3 LEED projects to the CaGBC.

<http://www.oee.nrcan.gc.ca/commercial/newbuildings/consultants.cfm?attr=20>

The **Green Building Design Concept (Charrette) Leader** must have experience leading projects through an integrated design process.

An **ASHRAE member** maintains formal membership with the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

The **Development Team** includes but is not limited to the following: Architect, Mechanical Engineer, Structural Engineer, Cladding Engineers, Landscape Architect, General Contractor, Subcontractors, Quantity Surveyor, Developer, and Cost Consultant.

Submittals

Provide the attached letter template, signed by the developer, or other responsible person. Include with the template a list of roles and qualifications for each team member. For both the Energy Modeler and the Design Concept Leader provide a list of previous projects including:

- A description of the project
- The consultant's role on the project
- Client reference information

Mandatory Green Building Requirement No. 2 Integrated Design Process (IDP)

Intent

To ensure that the Development Team realizes the benefits of an integrated design process. IDP enables all relevant project disciplines to work together in providing design solutions that optimize relationships between systems. The resulting creative design brings multiple benefits, often at a reduced cost.

Requirements

The project design shall follow an Integrated Design Process that includes the following:

1. A Concept Design phase focused on sustainability. The recommended approach is to hold conceptual design meetings (charrettes) attended by at least one individual from each member of the Development Team (including the *Energy Modeler* and cost consultant) and, where possible, the contractor. The Green Building Design Concept (Charrette) Leader, defined under Mandatory Green Building Requirement No.1 (Experienced Team), must facilitate the meetings.
2. Integrated Design team meetings, lead by the Green Building Design Concept (Charrette) Leader, are to be held, as a minimum, during design development and at the 10%, 60% and 90% construction document stages.

Waterfront Toronto may assist the Development Team by:

- Reviewing the IDP Concept Report (see below) for compliance with Waterfront Toronto's sustainability requirements and, where possible, provide recommendations for simplifying the process of achieving or exceeding the targets.

Submittals

The following documentation will be required at each of the following milestones:

1. **Concept Report**

The Concept Report shall describe the planned activities and expected outcomes of the IDP for the project. Submit **Waterfront Toronto's Sustainability Progress Tracking System** document showing the target credits for achieving LEED Gold (MGBR Requirement No. 10). "Buffer credits" are recommended to allow for a loss of credits that are found not to be feasible during the design phase, or are not awarded by the CaGBC in the final credit submission (i.e., a minimum of 43 credits should be targeted - more may be required depending on the risk level of selected target credits).

For all Mandatory Green Building Requirements, LEED Prerequisites and targeted LEED Credits (the Credits), provide the following:

- List of parties responsible for implementation and documentation (the "Credit Owner");
- A Memo of Understanding from each Credit Owner stating that they have read and understood the requirements as outlined in this document and as described in the LEED Reference Guide (including errata and related credit rulings posted by the CaGBC), as applicable.
- A brief narrative (can be point form) describing the preliminary strategy, possible obstacles and next steps for achieving the Credit, as agreed by the Design Team. Note that the strategy could change during design development.

2. Design Development Report

Report on the continuing IDP.

Submit Waterfront Toronto's Sustainability Progress Tracking System as described in part 1 above, indicating the status of credits to be achieved and any obstacles.

Submit a copy of the Design Development energy model, indicating that the targeted annual energy consumption levels are being achieved.

3. 60% Design Submission

Submit Waterfront Toronto's Sustainability Progress Tracking System as described in part 1, above.

Credit Owners are to update the status report for each credit describing outstanding issues, next steps and how the Requirement, Prerequisite or Credit has been incorporated into the 60% Documents.

Provide the available supporting documentation for each Credit. Identify dates, agreed upon by the design team, for submission of outstanding supporting documentation. Where the final supporting documentation is to be provided by the Contractor (e.g., LEED Credit EQc4.2 - Low Emitting Materials), provide documentation showing that the design consistently requires that the credit be met.

4. 90% Design Submission

Submit Waterfront Toronto's Sustainability Progress Tracking System as described in part 1, above.

Credit Owners are to update the status report for each credit describing outstanding issues, next steps and how the requirement, prerequisite or credit has been incorporated into the 90% Documents.

5. Final Design Documents

Submit Waterfront Toronto's Sustainability Progress Tracking System as described in part 1, above.

For all Credits provide updates or changes since the 90% status report.

Provide the required supporting documentation for all Credits, except where the final supporting documentation is to be provided by the Contractor.

Provide a copy of the CBIP assessment report from NRCan indicating that the targeted annual energy surveys are being achieved.

6. Substantial Completion

Provide a copy of the LEED Canada submission and all Mandatory Green Building Requirement Letter Templates signed, with all required submittals.

Mandatory Green Building Requirement No. 3 District Energy

Intent

To provide cost-effective, sustainable energy sources to buildings.

Requirements

Design and construct buildings and building systems as required by the Waterfront Toronto Energy Service Agreement. Refer directly to the Energy Service Agreement.

Mandatory Green Building Requirement No. 4 LEED Gold Certification

Intent

To confirm, through third party certification, that high-level, green-building performance has been achieved.

Requirements

All buildings eligible for certification under LEED Canada-NC version 1.0 must achieve gold level certification from the CaGBC (a minimum of 39 credits plus all prerequisites)

and

Credits awarded must include:

- EAc1 Optimize Energy Performance (minimum of 4 points) by achieving a 40% reduction in design energy cost relative to MNECB with a preferred target of 60% or better
- EAc5 Measurement and Verification

Submittals

Provide CaGBC's final building assessment confirming that the above requirements have been achieved.

Mandatory Green Building Requirement No. 5a) High Efficiency, Energy Star Rated Appliances

Intent

To maximize energy and water efficiencies to reduce the burden on energy supply, municipal water and waste water systems.

Requirements

All appliances supplied by the developer, that are eligible for rating under the Energy Star program, must be Energy Star compliant.

Submittals

Provide the attached letter templates, signed by the developer or other responsible person. Include a list of developer-supplied appliances. Identify and provide documentation indicating that eligible appliances meet Energy Star rating.

Documentation should include:

- Cut sheets from the manufacturer confirming Energy Star compliance, or
- CSA Energy Star test reports.

Definitions

Energy Star is an international symbol used to identify products that are among the most energy-efficient on the market. Only manufacturers and retailers whose products meet the ENERGY STAR criteria can label their products with this symbol. Products are tested to CSA standards. For a list of eligible products refer to NRCan website.

<http://oee.nrcan.gc.ca/energystar/english/consumers/products.cfm?PrintView=N&Text=N>

Eligible Products Categories include:

- Clothes Washers (including washer/dryer combination units)
- Refrigerators
- Dishwashers
- Ventilating Fans (kitchen, bathroom exhaust)

Mandatory Green Building Requirement No. 5b) Meter Energy and Water Consumption

Intent

To encourage conservation by building residents and occupants by providing them with the means to track their utility usage/consumption and through direct unit billing.

Requirements

Each residential unit or leaseable commercial space within the building will be individually submetered with revenue grade meters for all water and energy inputs. Until such time as revenue grade metering becomes economically feasible, allocation alternatives will be acceptable. The submeters shall individually measure at each suite the consumption of electricity (time of day), natural gas, energy supplied through district supplied heated and chilled water, domestic hot and domestic cold water. The submetering for electricity must include time of day usage in order to facilitate differential rate billing and consequently encourage peak time reduction. Suites are to be independently billed for their utilities based on consumption.

Submittals

Provide the attached letter template, signed by the electrical and mechanical engineers (or other responsible parties), demonstrating and declaring that the utilities, under their design control, for each unit of the building in question, have been submetered including time of day usage meters for electricity.

Note:

1. We have not required that a firm be retained to generate utility bills for individual residents, although this is an option.
2. We are leaving the decision, regarding bill collection, to the residents or building owner. A condominium corporation can generate bills for suite owners to be paid as part of their maintenance fees and retain responsibility for paying the utilities directly. One advantage of this is that as a large consumer, the corporation can often negotiate better rates than an individual resident.

Mandatory Requirement No. 6 Long-Term Flexibility

Intent

To provide building characteristics that allow for future changes in use without structural modifications.

Requirements

Provide the following height and structural loading capacity for each of the follow assemblies.

Ground Floor for all development, excluding residential buildings that are within the category of Part 9: Housing and Small Buildings, of the Ontario Building Code:

1. Clear slab to slab height (to underside of 2nd floor slab): minimum 5m, and
2. Structural live load capacity: minimum 4.8 kPa

Typical Floors Above Ground:

1. Clear slab to slab height: 2.75 m

Above Grade Parking:

1. Clear slab to slab height: 2.4 m (after leveling floor slopes)
2. Structural live load capacity (slab on grade): minimum 7.2 kPa
3. Structural live load capacity after leveling (suspended slabs): minimum 4.8 kPa

Submittals

Provide the attached letter template, signed by the Structural Engineer, or other responsible person, confirming the structure is designed and built to conform to the above requirements. Include details of the future parking garage leveling plan on structural drawings.

Mandatory Green Building Requirement No. 7 Green Roofs

Intent

To create buildings that provide a visual connection between community residents and plant life, help reduce the urban heat island effect and contribute to sustainable stormwater management.

Requirements

For all buildings over 3 storeys in height and all parking garages:

Design 100% of all low slope roofs to accommodate an intensive green roof (8.2 kPa superimposed dead load). Low slope roofs are those with a slope less than or equal to 2:12 (20%).²

AND

On Buildings - Install a vegetated roof over an area of at least 50% of the gross ground floor area. The vegetated roof can be intensive or extensive.

On Parking Garages - Install a vegetated roof over an area of at least 50% of the roof area not used for parking or roadways. The vegetated roof can be intensive or extensive.

The 50% gross area of the ground floor includes the mechanical roof area. It is assumed that of the total gross floor area, 50% will be Green Roof and the mechanical room can be accommodated in the remaining 50% (or less).

Submittals

Provide the Letter Template, signed by the Architect, Structural Engineer, or responsible person, referencing the building plan and demonstrating that the building structure has been designed to:

- Accommodate an intensive green roof over 100% of all low slope roofs
- For buildings, provide a vegetated roof over an area of at least 50% of the gross ground floor area
- For parking garages, provide a vegetated roof over an area of at least 50% of the roof area not used for parking or roadways

Provide specifications and cut sheets describing the extent and makeup of the vegetated roof systems.

² Low slope roofs have the structural capacity to support intensive roofs and the cost of adding that capacity in the original design is very low compared to the cost of retrofitting.

Mandatory Green Building Requirement No. 8 Waste Management

Intent

To minimize waste going to landfills and to encourage all building residents and occupants to participate in responsible waste management.

Requirements

Kitchen suites must be designed to have separated cabinet space for segregated collection of waste in three streams.

1. Waste
2. Recyclables
3. Organics

Submittals

Provide the attached letter template signed by the Architect, or other responsible person, confirming that kitchen suites have been designed and built to conform to the above requirements. Include a narrative describing anticipated waste flows and how they will be accommodated in the design, supported with architectural/interior drawings, if required.

Mandatory Green Building Requirement No. 9 Bicycle Parking and Storage

Intent

To reduce pollution and automobile-related land development impacts.

Requirements

Projects must be designed and built in compliance with the bicycle parking and storage requirements outlined in LEED ND (SLLc5 and NPDC6). Requirements include:

- For all buildings, provide bicycle parking or storage space for 15% of the off-street parking capacity provided for cars for those buildings
- Provide bicycle parking within 183 metres of the entrance to the building that it services.

Refer to the LEED ND Reference Guide (USGBC Pilot Version) for complete details on all credit options and requirements.

Submittals

Provide the attached letter template, signed by the Architect or other responsible person, confirming that the bicycle facilities are designed and built to conform to the LEED requirements.

Mandatory Green Building Requirement No. 10 Sustainability Progress Tracking System For LEED Gold Certification and Mandatory Green Building Requirements

Intent

To track developer progress with respect to fulfilling LEED NC requirements (MGBR requirement No. 4) and Waterfront Toronto's Mandatory Green Building Requirements.

Requirements

Completion Waterfront Toronto's Sustainability Progress Tracking System

Submittals

Submit the Sustainability Progress Tracking System at project milestones set out in the tracking system.



Waterfront Toronto

Mandatory Green Building Requirements

Templates

For Mandatory Requirements No. 1 to No. 9

(November, 2009)



Mandatory Green Building Requirements Templates

Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: **Mandatory Green Building Requirement No. 1 – Experienced Team**

*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (developer/responsible person) certify that the following individuals, with the experience noted, are permanent members of the design and development team for this project.

Name	Firm	Role	Qualifications
		LEED Accredited Professional	
		CBIP Consultant (energy modeler)	
		ASHRAE Member	
		Green Building Design Concept (Charrette) Leader	

I have attached a list of project examples with references demonstrating the required experience of the:

- CBIP Consultant; and
- Green Building Design Concept (Charrette) Leader.

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



Mandatory Green Building Requirements Templates

Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 2 - Integrated Design Process
*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (architect/responsible person) certify that the design of this project was accomplished using an integrated design process as outlined in the Request for Proposals.

I have provided:

- all submittals as defined in Mandatory Green Building Requirement No. 2 at
- the appropriate project milestones.

I have attached copies of:

- meeting minutes and signed attendance sheets from the design concept and
- integrated design team meetings
- energy simulation file and output, and
- LEED Canada submission.

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



PROJECT NAME

***DATE ***

MEMORANDUM OF UNDERSTANDING for Mandatory Green Building Requirement No. 2 - Integrated Design Process

For: ***Credit Owner Company***

I have read and understand the Waterfront Toronto’s Mandatory Green Building Requirements (MGBR), relevant LEED Reference Guide, and related LEED resources (addenda, CIRs, Letter Templates, etc.) with respect to the requirements/credits I am responsible for.

I have read and understand the tasks necessary to complete and document these requirements and credits, including all referenced standards and guidelines, as laid out in the MGBR and ***Insert LEED version*** Reference Guide. I will take responsibility for their implementation including the following:

- identify obstacles or risks to requirement/credit achievement as soon as they become known;
- if a credit is deemed feasible, prepare the required supporting documentation, and sign off on the Letter Template; and
- include credit requirements in the contract documents.

At this time, I accept responsibility to complete the above tasks for the following credits:

Enter all credits for this credit owner in the spaces below, i.e. MGBR5a, MGBR6, SSp1, WEc2, etc. and delete this note

_____ YES NO
 _____ YES NO
 _____ YES NO
 _____ YES NO

_____ YES NO
 _____ YES NO
 _____ YES NO
 _____ YES NO

_____ YES NO
 _____ YES NO
 _____ YES NO
 _____ YES NO

For all credits checked “No,” I have identified the clarification required and/or the obstacles to credit implementation in the following table (example in first line):

Credit	Clarification Required	Obstacles	Issue
WEc2		X	Requires design changes which exceed approved budget.

I agree to all above statements and have completed this form to the best of my knowledge. I will notify the team immediately if there are any changes to the information provided.

Name (please print): _____

Company: _____

Signature: _____

Date: _____



Mandatory Green Building Requirements Templates

Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 3 – District Energy

*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (architect/responsible person) certify that this building and building system has been constructed as required by the Waterfront Toronto Energy Service Agreement.

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 4 – LEED Gold Certification

*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (developer/responsible person) certify that LEED Gold Certification has been awarded to this project.

I have attached certification documents as provided by the Canada Green Building Council.

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 5a – High Efficiency Appliances

*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (developer/responsible person) certify that all appliances being supplied on this project, which are eligible for rating under the Energy Star program, are Energy Star rated.

The following appliances are being supplied:

Appliance	Manufacturer	Model	Energy Star Eligibility	Energy Star Rated
Clothes washer				
Refrigerator				
Dishwasher				
Ventilation fan				

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 5b – Suite Energy and Water Meters
*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (mechanical engineer/responsible person) certify that all energy and water flows to each suite are being metered for time of day usage.

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 6 – Long Term Flexibility

*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (structural engineer/responsible person) certify that the following heights and structural loading criteria have been met:

Ground Floor for all developments excluding residential buildings within the category of Part 9: Housing and Small Buildings of the Ontario Building Code:

- 1. Top of ground floor slab to underside of 2nd floor slab: 5 m
- 2. Ground floor live load capacity: minimum 4.8 kPa

Typical Floors Above Ground: Clear slab to slab height: 2.7 m

Above Grade Parking:

- 1. Headroom Criteria: 2.4m (after leveling floor slopes)
- 2. Structural live load capacity (slab on grade): minimum 7.2 kPa
- 3. Structural live load capacity after leveling (suspended slabs): minimum 4.8 kPa

I have attached:

- Details from the structural drawings showing the leveling plan for sloped parking decks

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 7 – Green Roofs

*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (structural engineer/responsible person) certify that all buildings over 3 storeys in height and all parking garages meet the following requirements:

- 100% of all low slope roofs have been designed to accommodate an intensive green roof.
- On all buildings, vegetated roofs have been installed over an area of at least 50% of the gross ground floor.
- On all parking garages, vegetated roofs have been installed over an area of at least 50% of the roof area not used for parking or roadways.

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.



Date:

Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No.8 – Waste Management

*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (architect/responsible person) certify that the suite kitchen waste separation criteria has been met. Kitchen suites will be designed to have separated cabinet space for segregated collection of wastes in three streams:

1. Waste
2. Recyclables
3. Organics

I have attached a:

- Narrative for anticipating waste flows and how they will be accommodated in the design, and
- Supporting architectural/interior design drawings, if required

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date:

encl.



Waterfront Toronto

Address*

Address*

Address*

Attention: ***contact***

Re: Mandatory Green Building Requirement No. 9 – Bicycle Parking and Storage
*****Project Name and Municipal Address*****

To Whom It May Concern:

I, _____, as the (architect/responsible person) certify that this project has been designed and built in compliance with the bicycle parking and storage requirements outlined in credits SLLc5 and NPd6 in the USGBC Pilot Version of LEED ND.

Yours truly,

Name: _____

Organization: _____

Role in Project: _____

Signature: _____

Date: _____

encl.