

Major Environmental Activities of Toronto Building

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Presentation to
Parks and Environment Committee
November 19, 2008

What We Do

Toronto Building

Vision

We are leaders in building Toronto's future as stewards of a healthy, safe, accessible, sustainable built environment.

We are leaders in the application and promotion of building regulations, delivering innovative and responsive services, setting the standard that others follow.

We are leaders in building Toronto – into the future.

Building Regulation in Canada

 Canada

**Model National Code
Development**

 Ontario

**Administration:
Building Code Act;
Ontario Building Code**

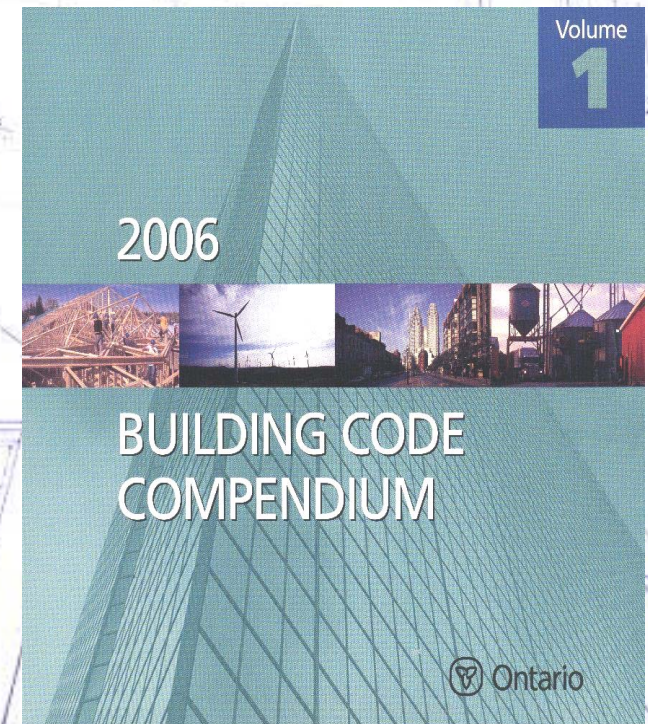
 **TORONTO**

**Enforcement of Act,
Code including
applicable laws**

**COTA authority for
Green Roof Standard**

2006 Ontario Building Code

- Energy efficiency provisions in the 2006 Code phased in between 2007 to 2012
- Energy Savings by 2012:
- Houses - 35%
- Non-Residential/Larger Residential -25%
- Enabling provisions for “Green technologies”



Fast-Tracking 2012 Code

Climate Change, Clean Air and Sustainability Action Plan:

“request the Province to fast-track changes to the energy and sustainability requirements of the Ontario Building Code for buildings in Toronto”

- Toronto Building is the lead on this key recommendation
- Ongoing discussions with Province
- Integral component of Toronto Green Standard

Helping to Build Green



Background

As part of the ongoing amalgamation of Toronto, staff are working towards bylaw. Recently, the City of Toronto permits for the widths of driveways in the front yards of small residential

What exactly is affected

- the amount of 'landscaping' required
- the definition of 'landscaping'
- the amount of 'soft landscaping'
- the definition of 'soft landscaping'
- the minimum width of driveways
- the maximum width of driveways

The new bylaws are written so the size, landscaping, soft landscaping all directly related to one another.

Why regulate these things

When the front yard is covered by spaces, there is less area for trees means that when it rains, the water into the storm water system (often chemicals with it) instead of being and replanting the water supply

Other reasons for regulating

- Garages being converted into livable space
- Instead of parking
- Front yards being turned into paved

LANDSCAPING is defined as: trees, shrubs, and other vegetation, decorative screening, or other horticultural elements, or any combination of these, driveways or parking areas, and dirt, sod or retaining walls.

SOFT LANDSCAPING is defined as: trees, shrubs, and other vegetation, but

Solar Hot Water Heaters Making Your Home Solar Ready

City of Toronto Building

During construction or renovation, providing solar energy can be easy. When the time your solar water heater, a few preparatory hundreds of dollars and will ensure provide maximum energy savings.

The information contained in this flyer is and should not be considered a substitute advice. Also, the installation of a Solar into your home will require a Building Permit (comply with all applicable laws). Please Toronto Building office for more details.

Basic Solar Design Issues

Unfortunately not all existing homes are water heater. It is estimated that shade orientation limit one out of every four using this renewable energy source. Not building a new house or an addition that opportunity to ensure that your home is solar potential.

Making your home Solar Ready involves areas of your home:

- The roof - where the solar hot be installed
- The utility room - where the water tank will be installed
- The pipe run or 'chase' - which run between the roof and the

On the Roof

Roof Orientation

Direction: South east to south west solar can typically be installed within 45° of so only marginal performance losses. The slope of the solar collector(s) when roughly match your latitude (44° in Toronto 15° should not impact the overall performance; also roof racking systems and the angle of the solar collectors.

Space on the Roof

A 3.6m wide x 3m high (12' wide x 10' for the installation of most solar collectors be clear of chimneys, roof vents, dormer protrusions.

There should be a minimum of 0.6m (2' between all sides of the collectors and for maintenance and safe access from roof contractors.

The solar collector space on the roof should be as possible to allow for a simple connection to the solar collectors on the bottom and the top of the collectors.

Roof Loading

Most solar collectors have a "load" of 20 kg per m² and generally do not need structural support on modern roofs. However, solar systems that have their roof can add substantial weight to a roof preparation may be required to ensure support the collectors and storage tanks. Solar collectors installed on a roof rack, likely to experience greater wind loading require increased structural support.

Shading



Introduction

Prior to March 2006, City of Toronto zoning bylaws did not allow for the capturing and selling of energy using renewable energy sources or co-generation devices. In response to this, a zoning bylaw amendment was passed by Council to permit the use of renewable energy and co-generation devices, and to permit the distribution of energy produced by these devices.

This new zoning bylaw permits energy production and distribution using renewable energy devices and co-generation devices on every property, subject to the zone regulations. This will ensure that the device is constructed and located on a lot in a manner which protects the existing character of the area.

This stand-alone zoning bylaw is a first step in encouraging the broader use of renewable energy, by providing an as-of-right zoning permission, to produce and distribute energy from renewable energy and co-generation devices.

"Renewable energy" means energy obtained from solar energy, wind energy, or geo-energy.

"Distribution" means the delivery of energy derived from renewable energy or co-generation energy, to a distribution network connected to the lot.

Solar Energy Devices

These are devices that capture the sun's energy and convert it into electricity or thermal energy.

Under the new zoning bylaw requirements:

- For zones that allow dwelling units:
 - when a solar energy device is located on a building, it is subject to the zoning requirements for the building on which the device is located; and,
 - when not located on a building, it is subject to the zoning requirements for an accessory or ancillary building or structure on a lot in the zone in which the device is located.

For zones that do NOT allow dwelling units:

- all parts of the solar energy device are subject to the zoning requirements for the main or principal building on the lot

Green Roofs and Building Permits

Requirements of the Ontario Building Code and other Applicable Law

City of Toronto Building



Introduction

On February 1, 2006, Toronto City Council approved a set of recommendations to encourage the construction of Green Roofs in the City of Toronto. These recommendations became the foundation for the City of Toronto's Green Roof Strategy.

A Green Roof is a roof surface that allows plants, trees, and shrubs to grow on top of a building or structure. They can provide many benefits to urban areas as well as the building itself. Reduced stormwater run-off, increased insulation, or simply aesthetic benefits can be realized by the addition of a Green Roof.

It is important to realize however that a Green Roof requires significant design details in order to account for increased weight, wind loads and water retention and other building systems that it may affect. A green roof is also considered to be a 'material alteration' to a building, and therefore qualifies as construction under the Building Code Act.

Section 8 of the *Building Code Act* requires that a Building Permit be obtained prior to any construction taking place. As part of the Building Permit review process, designs are evaluated against the requirements of the Ontario Building Code (OBC).

The OBC does not explicitly recognize Green Roofs in new construction and renovation; it is simply a roof system that must comply with the provisions of the Code like any other. However, in the absence of prescriptive requirements for a type of construction, the review of an application to determine if it meets the requirements of the OBC becomes increasingly complex.

The Ontario *Building Code Act* allows for the Chief Building Official to accept design alternatives provided that they will meet the minimum requirements set out in the OBC. Each building permit application containing a Green Roof proposal is reviewed and inspected by Toronto Building staff based on the designs which must be assessed as alternatives to the requirements of the Building Code. This can be more challenging and time consuming than assessing a building design against prescriptive requirements.

This is currently the way in which Building Permits involving Green Roofs must be issued in the City of Toronto today.

The Toronto Green Roof Design Standard

The *City of Toronto Act (2006)* authorizes passing a by-law to regulate the construction of Green Roofs provided that the provisions of the by-law do not conflict with the Ontario

Building Code with respect to: public health and safety; fire protection; structural sufficiency; resource conservation; and, environmental protection, as well as requirements respecting barrier-free access. This by-law will include a Toronto Green Roof Design Standard.

The Toronto Green Roof Design Standard is intended to provide City staff, as well as construction and design professionals, with a set of prescriptive requirements for the design, evaluation, and inspection of Green Roofs in the City of Toronto, similar to the Ontario Building Code (OBC).

The development of the Green Roof By-law has been reported to, and endorsed by members of Toronto City Council and Standing Committees. Public meetings are expected to begin in the spring, with a draft by-law expected to be prepared in the summer of 2008.

The standard will also ensure that City of Toronto policy objectives such as: reduced urban heat island; stormwater management; reduced energy consumption; and, improved air quality are achieved.

Section 108 of the *"City of Toronto Act 2006"* includes the following related to the construction of green roofs:

108.(1) Without limiting sections 7 and 8, those sections authorize the City to pass a by-law requiring and governing the construction of green roofs if the provisions of the by-law do not conflict with the provisions of a regulation made under the *Building Code Act, 1992* respecting public health and safety, fire protection, structural sufficiency, conservation and environmental protection and the requirements respecting barrier-free access.

(2) A by-law under subsection (1) prevails over a regulation made under the *Building Code Act, 1992*, despite section 35 of that Act.

(3) For the purposes of subsection (1), "green roof" means a roof surface that supports the growth of vegetation over a substantial portion of its area for the purpose of water conservation or energy conservation.

The Toronto Green Roof Design Standard must be flexible enough to take into account the following types of green roof construction:

- Green roofs on new buildings, or as a Retrofit on an existing building;
- Intensive Green Roofs vs. Extensive Green Roofs;
- Complete Green Roof Systems, Modular Green Roof Systems, or Pre-cultivated Green Roof Systems.

These design considerations and Green Roof types are

Green Roof Bylaw

City of Toronto Act

Permits the City to require green roofs through a by-law and govern their construction

First time, since introduction of OBC, municipality permitted to govern certain type of construction

Construction of Green Roofs

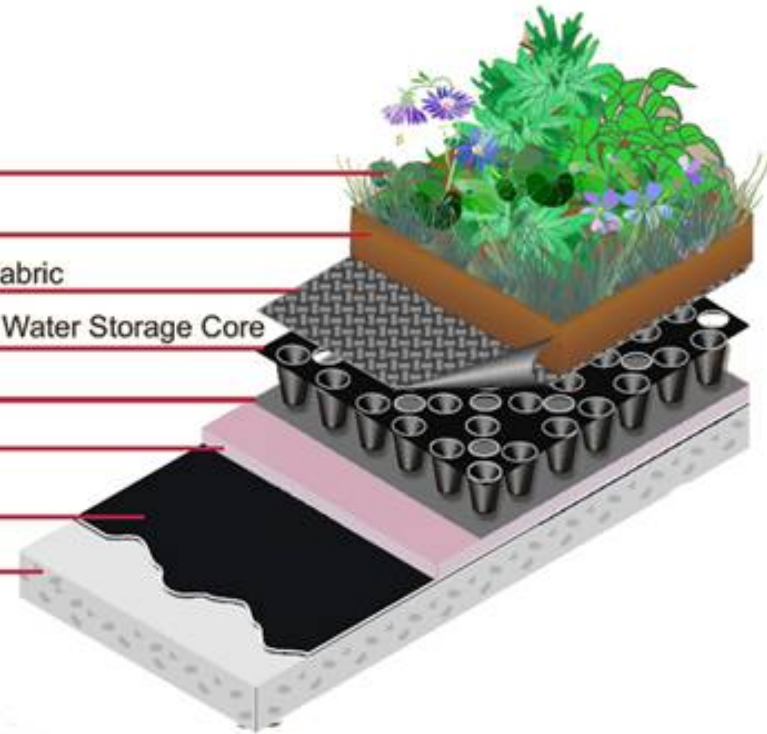
- (1) “...authorize the City to pass a by-law requiring and governing the construction of green roofs....”
- (2) “...despite section 35 of that [Building Code] Act”
- (3) definition of “green roof”
- (4) Repeal provision

Green Roof Standard

Falling Brook Lofts, Toronto



- Vegetation
- Growing Medium
- Root Barrier Filter Fabric
- Drainage, Aeration, Water Storage Core
- Separation Fabric
- Insulation
- Roofing Membrane
- Structural Support



Sign Bylaw Project



Environmental Considerations
and Opportunities

www.toronto.ca/signbylawproject

Future Environmental Activities

- Continue to research barriers to implementation of green technologies
- Develop standard details for solar domestic hot water systems
- Support implementation of Toronto Green Standard
- Conduct research and develop supportive tools for early implementation of 2012 energy efficiency provisions
- Continue to champion Toronto as leader on green building agenda, nationally and internationally