



STAFF REPORT ACTION REQUIRED

Amendment to the Green Roof Bylaw for Public and Separate School Board Buildings

Date:	February 23, 2012
To:	Planning and Growth Management Committee
From:	Chief Planner and Executive Director, City Planning
Wards:	All
Reference Number:	Pg12017

SUMMARY

This report recommends an amendment to the Toronto Green Roof Bylaw to permit new public and separate school buildings and building additions to provide an alternative roof surface that achieves a similar performance level to a green roof. An alternative option is proposed that would require new public and separate school buildings and building additions to install cool roofing material for 100 percent of the available roof space and adhere to a storm water management performance target. This alternative option is the same as the alternative option approved for industrial buildings in November 2011.

For school applications where an exemption or variance under the Bylaw has been approved and cash-in-lieu of a green roof has been paid, this report recommends that a refund be granted if the roof complies with the new alternative approach requirements.

The report also provides a status update on the revisions to the Toronto Green Roof Construction Standard and responds to Council's request for information on mechanisms to fund rooftop planting beds.

The Chief Building Official, Executive Director, Toronto Building and the Director, Toronto Environment Office were consulted in the preparation of this report.

RECOMMENDATIONS

The Chief Planner and Executive Director, City Planning recommends that:

1. City Council request the City Solicitor prepare an amendment to Chapter 492 of the Municipal Code – Green Roofs (known as the Toronto Green Roof Bylaw) for submission to the City Council meeting of April 10, 11, and 12, 2012 to allow for an alternative option to green roofs with respect to public and separate school buildings that provides a roof surface that:
 - a. Uses cool roofing materials for 100% of Available Roof Space; and
 - b. Complies with the stormwater management performance measures required through the Site Plan Approval process, pursuant to Section 114 of the City of Toronto Act; or where Site Plan Approval is not required, retains or collects for re-use at least the first 5 mm from each rainfall or 50 % of annual rainfall volume falling on the roof through systems that incorporate roof surfaces
2. City Council authorize the Chief Financial Officer to provide a refund equivalent to the cash-in-lieu of a green roof paid to the City at the time of building permit applications for public and separate school board buildings and building additions if the buildings comply with the alternative option mentioned in Recommendation number one of this report.

Implementation Points

New school buildings or building additions over 2,000 m² of gross floor area are required to provide a green roof under the Green Roof Bylaw. The proposed revisions to the Bylaw will apply to Complete Building Permit applications received on or after April 11, 2012, the proposed date of enactment of the amending bylaw.

The implementation of the amendment to the Green Roof Bylaw for public and separate school buildings and building additions, as recommended in this report, requires notification for applicants in preparation for the amendment to the Bylaw coming into effect on April 11, 2012.

Where a variance or exemption under the Green Roof Bylaw has been approved for a school building or building addition and payment of cash-in-lieu of a green roof has been received as part of the Building Permit application, a refund would be issued.

Financial Impact

The recommendations of this report will have no financial impact on the approved 2012 budget as the cash-in-lieu paid for public and separate school board Building Permit applications have been set aside in a deferred revenue account and not committed for any other environmental initiative.

The funds for hiring a consultant to revise and design the new *Revised Green Roof Construction Guidelines and Best Practices* (estimated to be approximately \$3,000.00) are available in the Toronto Building approved 2012 operating budget.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on November 29, 30 and December 1, 2011, City Council amended the Green Roof Bylaw to permit an alternative option to green roofs for industrial buildings. The alternative option requires new industrial buildings and building additions to install cool roofing material and, and where site plan approval is not required, adhere to a storm water management performance target. Council also directed City Planning and Toronto Building to report to the March Planning and Growth Management Committee meeting on: an alternate option for public and separate school board buildings; revisions to the Green Roof Bylaw including updates to the Toronto Green Roof Construction Standard; and mechanisms to fund rooftop planting beds.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PG9.1>

At its meeting on November 8, 2011 the Planning and Growth Management Committee referred a request by the Toronto Catholic District School Board (TCDSB) for a refund of the cash-in-lieu payment required for an exemption under the Green Roof Bylaw for 20 Coules Court, to the March meeting of the Committee.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PG9.12>

At its meeting on February 6 and 7, 2012, Council directed City Planning and Toronto Building to report on a the possibility of providing a refund for cash-in-lieu paid under the Green Roof Bylaw for all public and separate school board buildings.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.NY12.48>

ISSUE BACKGROUND

During the public consultations on the Green Roof Bylaw in 2008 and 2009, representatives of the public and separate school boards raised concerns with a requirement for green roofs on school buildings. School board representatives indicated that the Ministry of Education did not provide additional capital funding for the installation of green roofs for schools within the City of Toronto - resulting in a reduction in available funds for at-grade landscape improvements accessible to students.

Early consultations included a proposal for alternatives to a green roof to achieve similar benefits to a green roof on school board sites, however the legislative authority under the City of Toronto Act (COTA) only permitted a requirement for vegetated roof surfaces and did not allow for alternatives. In December 2009, at the City's request, the Province

amended COTA to permit the City to require and govern alternative roof surfaces with similar levels of performance to green roofs.

When the Green Roof Bylaw was adopted in May 2009, Council requested that the Ministry of Education amend the funding formula for schools to provide funding for green roofs. The Province notified the City that no additional funding would be provided to meet the requirements of the Bylaw.

COMMENTS

Alternative Option for Public and Separate School Board Buildings

A working group consisting of representatives of the Toronto Catholic District School Board (TCDSB), Toronto District School Board (TDSB), Conseil Scolaire de District Catholique Central Sud (CDSCCS), and Conseil Scolaire Viamonde (CSV) and staff from City Planning and Toronto Building met twice to discuss concerns with providing green roofs on school buildings and to determine interest in extending an alternative option to public and separate school buildings under an amended Green Roof Bylaw. The working group stressed that school sites represent a rare type of development, that typically consist of a low-rise building on a large site with large open space areas which in many cases allows new development to achieve many of the performance objectives of a green roof at-grade.

In 2010, the City completed a Green Roof Alternatives Study to compare the performance of a green roof to alternative roof treatments and to identify alternatives that have similar performance levels to a green roof. The Study concluded that there is no single alternative that would meet the performance level of a green roof. However a combination of alternatives, such as strategies to address urban heat island and stormwater management objectives, can achieve several of the objectives of a green roof.

To address the urban heat island, the Alternatives Study concluded that a cool roof with a minimum Solar Reflective Index (SRI) of 79 can be used to achieve similar reductions in the ambient air temperature above a roof as a green roof. A cool roof is a roofing system with a highly reflective and emissive membrane or ballast that can restrict the temperature rise above the roof surface to 5-16°C. In comparison, a grey asphalt shingle roof surface would increase the ambient air temperature above the roof by 38°C. There are several rating systems for cool roofing products that assess the initial performance and performance over time of cool roofing products.

To address stormwater management, applications for new development currently must identify how stormwater is managed on-site for all hard surfaces including the roof, through the Site Plan Control approval process. Where Site Plan Approval is not required, it is proposed that a roof surface be provided that retains or collects water for re-use to a level that meets or exceeds the performance of a green roof. This could be

achieved through such strategies as: rooftop restrictors, infiltration of roof runoff and rainwater harvesting.

In the interest of consistency and clarity, it is proposed that the alternative option for public and separate school board buildings and building additions be consistent with the alternative option approved for industrial buildings, such that where a green roof is required under the Green Roof Bylaw, an alternative option to a green roof be permitted, provided that a roof surface:

- a) Uses cool roofing materials for 100% of Available Roof Space; and
- b) Complies with the stormwater management performance measures required through the Site Plan Approval process, pursuant to Section 114 of COTA; or where Site Plan Approval is not required, retains or collects for re-use at least the first 5 mm from each rainfall or 50 % of annual rainfall volume falling through systems that incorporate roof surfaces.

Refund of Cash-in-lieu Paid

Approved variances and exemptions under the Green Roof Bylaw require the payment of cash-in-lieu for the area of green roof not constructed. The cash-in-lieu is deposited in the Eco-Roof Incentive Program fund. Since the implementation of the Bylaw, five school applications have received variances or exemptions under the Bylaw requiring the payment of cash-in-lieu prior to Building Permit issuance. Currently all five Building Permit applications are under review, with cash-in-lieu having been paid for only one application at the time of writing this report.

To ensure an equitable application of the Bylaw to all school boards, it is recommended that a refund be authorized equivalent to the cash-in-lieu of a green roof paid to the City at the time of building permit application provided that the roof complies with the new alternative approach requirements.

Status of Revisions to the Toronto Green Roof Construction Standard

A key component of the Green Roof Bylaw is the Toronto Green Roof Construction Standard ("the TGRCS") contained in Article IV of the Bylaw which sets out the City's requirements for constructing a green roof in Toronto. Green roofs are the only aspect of construction for which the City has the authority to set standards. The construction standard provides certainty and clarity in the design and construction of all green roofs in the City. The TGRCS was developed to meet the provincial code requirements for the building as a whole, while setting out a set of minimum requirements for green roof design that also achieves the code objectives. The Ontario Building Code remains silent on requirements for green roof construction.

The Green Roof Bylaw (**§492-18. Changes to Technical Standards**) prescribes that the Chief Building Official periodically review the Toronto Green Roof Construction

Standard and, after consultation with the Green Roof Technical Advisory Group, recommend amendments to City Council to reflect the City's experience with green roofs and new construction techniques and materials.

The Green Roof Technical Advisory Group (TAG) is comprised of members appointed by the Chief Building Official based on the terms of reference set out in the Green Roof Bylaw. Membership is based on a matrix to ensure that diverse interests and technical expertise in engineering, building science, architectural design and green roof research are represented.

The supplementary guidelines document, released in 2009 contains directions to members of the public who would like to submit a proposed change to the standard. Staff have received only one recommendation for a minor technical amendment to the standard since 2009. Staff have also reviewed the construction standard based on anecdotal feedback from the public and questions from permit applicants over the past three years. Based on this experience, the TAG will be meeting to discuss the following two key areas:

1. Facilitating Construction of Voluntary, Small Scale Green Roofs

The public enquiries on the standard have indicated to staff that the City should improve how the TGRCS addresses small-scale green roofs, typically found on low-rise residential buildings. The TGRCS should not be an impediment or disincentive for the construction of smaller green roofs. Staff recognize the role that these voluntary green roofs play in supporting the City's Green Roof policy, in addition to the larger scale green roofs required under the Bylaw. It is recommended that the TAG review the standard and provide the Chief Building Official with recommendations for technical amendments that may streamline the requirements for smaller green roofs construction while still achieving the core code objectives of health and safety.

2. Consideration of ANSI/SPRI Wind Uplift and Fire Standards

In 2010, the Single Ply Roofing Industry (SPRI) and Green Roofs for Healthy Cities developed two standards that were adopted by the American National Standards Institute (ANSI). The two standards are "Wind Design Standard for Vegetative Roofing" ([ANSI/SPRI RP-14](#)) and "External Fire Design Standard for Vegetative Roofs" ([ANSI/SPRI VF-1](#)). The Technical Advisory Group will review each standard for application to the City of Toronto context.

Following review by the TAG, the group may propose that the City adopt either or both of the standards into the Green Roof Bylaw in whole, or in part based on the outcome of its review.

The Chief Building Official will meet with the TAG to consider amendments on the two matters outlined above and will report, with the Chief Planner, to Planning and Growth Management Committee with specific technical amendments to the construction standard and other technical amendments to the Green Roof Bylaw.

Revised Green Roof Construction Guidelines and Best Practices

In 2009, the Chief Building Official released the first edition of the guidelines and best practices document that has been available to download on the City's website. Following the meeting with the Technical Advisory Group, the Chief Building Official will revise the 2009 Green Roof Construction Guidelines and publish a revised document on the City's website. The first edition of the guidelines was developed by the technical consultant that originally assisted Toronto Building in developing the Toronto Green Roof Construction Standard.

Mechanisms to Fund Rooftop Planting Beds

Roof top gardening boxes do not fit the definition of a green roof as defined in Section 108 of the City of Toronto Act, the enabling legislation that allows for Toronto's Green Roof Bylaw. Under the Bylaw a green roof is defined as, "*an extension of an above grade roof, built on top of a human-made structure, that allows vegetation to grow in a growing medium and which is designed, constructed and maintained in accordance with the Toronto Green Roof Construction Standard.*" Gardening boxes are not permanent and can easily be removed and are therefore not green roofs. All funding for green roof installations supported by the City's Eco-Roof Financial Incentive Program is administered by the Toronto Environment Office. The money comes from the cash-in-lieu process associated with the variance and exemption provisions of the Green Roof Bylaw. Therefore, it would be inappropriate to change the terms and conditions of the Eco-Roof Financial Incentive Program to include roof top gardening boxes. To be consistent with the intent of the Green Roof Bylaw, all funds collected through the cash-in-lieu policy must be utilized to support the installation of green roofs.

It is important to note that the City of Toronto already has in place a grant program that is available to support projects of this type. At the November 8, 2011 Planning and Growth Management Committee meeting, an example was used of a project at the University of Toronto. While it was ineligible for funding under the City's Eco-Roof Financial Incentive Program, it did receive a grant through the City's Live Green Toronto Community Grants program. There have been other similar community initiatives that have also received funding through the Live Green Toronto program. Because there is an existing funding mechanism, it is not recommended, at this time, that the City establish a new funding mechanism to support the installation of rooftop gardening boxes.

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SIGNATURE

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