



**City of Richmond**

**Report to Committee**

*To Planning - Sep 16, 2008*

**To:** Planning Committee  
**From:** Brian J. Jackson, MCIP  
Director of Development  
**Re:** **Green Roofs and Other Options Bylaw**

**Date:** September 4, 2008  
**File:** 12-8060-20-8385  
(xr = 08-4040-07-01)

**Staff Recommendation**

That "Green Roofs and Other Options Involving Industrial and Office Buildings Outside the City Centre Bylaw 8385" be introduced and given first, second and third reading.

Brian J. Jackson, MCIP  
Director of Development

FOR ORIGINATING DEPARTMENT USE ONLY			
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER	
Law .....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
Building Approvals .....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
Policy Planning .....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
Environmental Programs .....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
Engineering .....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
Fire Rescue .....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
<b>REVIEWED BY TAG</b>	YES <input checked="" type="checkbox"/> <i>GS</i> NO <input type="checkbox"/>	<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>

## Staff Report

### Origin

At its July 28, 2008 meeting, Council passed the following motion:

1. That the “Point System Option With No Specified Variance Process” approach, as outlined in the report dated July 3, 2008 from the Director of Development, be endorsed by Council for industrial and office building permit applications outside the City Centre having a building area of over 2,000 m<sup>2</sup> (21,529 ft<sup>2</sup>) received after January 1, 2009.
2. That a bylaw formalizing option 3 be brought forward for consideration in September 2008.
3. That staff continue to consult with the National Association of Industrial and Office Properties (NAIOP) and the Urban Development Institute (UDI) regarding the draft bylaw in July and August 2008.

The purpose of this report is to bring forward “*Green Roofs and Other Options Involving Industrial and Office Buildings Outside the City Centre Bylaw 8385*” that implements the “point system option with no specified variance process”. **Attachment 1** provides a summary of the key components of *Bylaw 8385*.

This bylaw is being enacted under Section 907 of the *Local Government Act* because its primary objective is runoff control and storm water management. The bylaw’s secondary objective is landscaping enhancements, which are authorized under Section 909 of the *Local Government Act*.

**Attachment 2** is a draft version of the point system that would be included in a bulletin that would accompany this bylaw. This bulletin describes how these two objectives could be achieved. It also permits other Green Building Initiatives in **Attachment 2** that are not stated or mandatory objectives of the bylaw. As such, these green building initiatives would be totally at the discretion of the building applicant (i.e., they are not required by this bylaw).

The intention is that other green building initiatives could be added to the bulletin in the future. For example, with further analysis, alternative transportation measures could be recognized. The green building initiatives along with the proposed flexibility and ongoing improvement of the implementation of the bylaw have been specifically requested by the industrial and office building community.

It should also be recognized that this bylaw is a pilot project. It is one of many tools that can be used as part of a broader goal to encourage green buildings. Furthermore, as data becomes available specific to Richmond’s unique storm water and drainage characteristics, *Bylaw 8385* will be reviewed and updated.

### Findings Of Fact

Essentially, here is how *Bylaw 8385* will work:

1. The building permit applicant must meet the objective of runoff control and storm water management. Specifically, the bylaw requires that the total annual volume of storm water runoff from the building be reduced by at least 20% of the volume that would enter the City’s storm sewer and drainage system by means of conventionally designed and

constructed roof drains conducting storm water runoff from a totally impermeable roof of equal area, directly to the storm sewer or drainage system.

2. One way of doing this is by means of a green roof on at least 75% of the building. The bylaw defines the green roof as an extensive green roof and assumes that this will meet the runoff control and storm water management objective. The building permit applicant could install an intensive green roof if so desired.
3. The second way of meeting this objective is by building to *LEED Silver* (or better) and meeting the *LEED Storm Water Management Credit*. In doing so, not only would the runoff control and storm water management objective be achieved, but various other green building objectives would be accomplished. For example, the applicant could consider using renewable energy sources such as geothermal or solar energy to meet the required *LEED* credits.
4. If neither of these two options are chosen, the applicant can meet the runoff control and storm water management objective in any one or combination of other ways as determined by a registered professional. The bylaw gives some guidelines to these other ways, such as the location of permeable pavers or asphalt, the type of landscaping in a bioswale, and so on. If this third way of meeting the runoff control and storm water management objective is chosen, the applicant must also meet the landscaping enhancement objective or could chose other green building initiatives.
5. The bylaw specifies that the landscaping enhancement objective is that the amount of landscaping must at least be doubled from that currently required under the *Zoning and Development Bylaw* (which is a minimum 3 m landscape buffer along the road).
6. One way of meeting this landscaping enhancement objective is by putting the parking on the roof and planting an equivalent intensive area of landscaping at grade. This would substantially increase the amount of landscaping on the ground and decrease the amount of impervious areas.
7. Another way the landscaping enhancement objective can be achieved is by vertical plantings or agriculture on the walls, trees in the parking area and other methods. The building permit applicant could also install intensive landscaping and native species in the bioswale or rainwater and detention cistern being used to meet the runoff control and storm water management objective.
8. The building permit applicant is encouraged, but not required, to use the landscaping enhancements for local food production and outdoor amenity space or to protect, enlarge or improve an environmentally sensitive area (ESA). This reflects the City's priorities and directs the applicant to seriously consider these alternatives.
9. If the green building initiatives are chosen instead of the landscaping enhancements, the applicant would be required to meet at least one of the specified *LEED* credits. For the time being, the energy & atmosphere credits are proposed to be listed in the bulletin along with their stated requirements. Essentially, the City will use the *LEED* credits to determine its objectives.

## Analysis

The following responds to some of the questions asked with regard to this proposed bylaw and green roofs on industrial and office building permit applications outside the City Centre.

*Is there a reason for the 2,000 m<sup>2</sup> (21,529 ft<sup>2</sup>) building area threshold?*

**YES.** This threshold is consistent with Council's "Sustainable High Performance Building Policy" for new City buildings and is being used in the proposed new *City Centre Area Plan (CCAP)* to determine which rezoning applications will be required to build to *LEED Silver*. A building area threshold of 2,000 m<sup>2</sup> (21,529 ft<sup>2</sup>) will also capture most of the new industrial and office building permits outside the City Centre.

*Are there insurance concerns regarding the green roof option?*

**NO.** Staff have not received any evidence or heard from the insurance industry to verify that there are insurance concerns for industrial and office buildings which have green roofs. The only insurance concerns staff are aware of relate to green roofs on residential construction (in discussions with the Homeowner Protection Office, this depends on the insurance provider). Similarly, staff have not been advised of any insurance issues from the professional associations who would have to give assurances regarding the green roof on an industrial or office building.

*Will the developer get a break on their storm water drainage requirements?*

**NO.** Until the bylaw has proven to be successful, staff are not in a position to reduce the off-site storm drainage requirements or to decrease the storm drainage development cost charges (DCCs). For example, reducing the total annual volume of storm water runoff by 20% does not address the impact of increased peak flows or when the ground is saturated. Therefore, it may not be appropriate to reduce the City's storm sewer or drainage system requirements. However, it is recommended that the bylaw be reviewed within 2 years – at which time the potential for revising certain engineering standards and DCCs can be examined. This will generally coincide with the City's update of the *Official Community Plan* and accompanying implementation strategy (e.g., storm drainage modelling).

*Does the bylaw recognize that there are different types of green roofs?*

**YES.** Where a green roof is chosen, the industrial or office building outside the City Centre must at a minimum be an "extensive" green roof. The bylaw defines a green roof as having a growing medium or soil depth of at least 2.54 cm (1 inch) that is planted with sedums, grasses and other vegetation that can withstand drought and excess water. An "extensive" green roof normally does not require intensive maintenance and is only used occasionally for inspection or maintenance purposes. There is nothing in the bylaw that would preclude an applicant from installing an "intensive" green roof having a growing medium or soil depth greater than 15.24 cm (6 inches) that could be planted with more substantial landscaping and be used for local food production or outdoor amenity space.

*Can the required improvements be provided off the site?*

**YES.** In certain rare instances, off-site improvements may be considered as an alternative to doing the work on site. For example, rather than locating a number of small garden plots or outdoor amenity areas on each individual property, it may be preferable to locate one larger environmentally sensitive area on a nearby property owned by the City along the waterfront

(e.g., Mitchell Island). If a cash contribution was proposed by the applicant, the City would have to ensure that the money is not being used for items already in the *DCC Program* and that this contribution is voluntary and is in no way a charge or fee. Council approval will be required in the rare instances off-site improvements are proposed.

Can the implementation of the bylaw be varied?

**YES.** If an applicant cannot meet the mandatory runoff control and storm water management objective required under Section 907 of the *Local Government Act* or the secondary landscaping enhancement objective required under Section 909 of the *Local Government Act*, a development variance permit would be required. Such a permit would have to be issued by Council and would go through the normal process of a staff review, public notification, the Development Permit Panel and a Council meeting. Staff do not envision that very many building permit applicants will want to go through the development variance permit process because of the time it takes and the additional rigour to which they will be exposed.

Will the bylaw be reviewed and updated?

**YES.** It is proposed that the City evaluate the success of the bylaw and report back to Planning Committee and Council on the results within 2 years. This evaluation would specifically assess the implementation of the runoff control and storm water management objective and landscaping enhancement objective. Within the 2 years, staff can update the bylaw or bulletin to include other green building initiatives. By adopting *Bylaw 8385* as a new, stand-alone bylaw (not part of the *Zoning and Development Bylaw*), these updates will not require a Public Hearing. It is envisioned that such updates will be triggered by requests from the industrial and office building community. The 2 year review of *Bylaw 8385* will be undertaken with input by City staff, NAIOP, UDI and other stakeholders.

Does the bylaw facilitate innovative food production opportunities?

**YES.** *Bylaw 8385* encourages (but doesn't require) green roofs and recognizes that they could be used for local food production. So, it is possible that small scale commercial operations could utilize the green roof on an industrial or office building outside the City Centre. Similarly, *Bylaw 8385* encourages (but doesn't require) vertical landscaping, which could also be used to grow agricultural products such as tomatoes, grapes, beans, etc.. So, in both ways, the bylaw does facilitate the possibility for "vertical farming".

## **Consultation**

Staff have consulted with the industrial and office building community through the UDI and NAIOP. The professional associations (Architectural Institute of British Columbia; Association of Professional Engineers and Geoscientists of British Columbia; British Columbia Society of Landscape Architects) have also been contacted regarding *Bylaw 8385*. The following summarizes the comments staff have received and the changes that have been made to the draft bylaw.

### Urban Development Institute (UDI)

Members and staff of UDI have provided a number of detailed comments regarding a draft of *Bylaw 8385*. Most of these comments have been incorporated into the final, proposed bylaw. One of the key points that UDI has made is that it wants as much flexibility as possible in the bylaw (i.e., there should be multiple ways in which a building permit applicant can achieve

the required objectives and other green building initiatives). In order to achieve this flexibility, the proposed point system has been removed from the bylaw and is proposed to be described in a bulletin (see **Attachment 2**). It is recognized by staff that the proposed green building initiatives are not mandatory and are beyond the statutory authority under which the bylaw is being adopted.

#### National Association of Industrial and Office Properties (NAIOP)

The key comment that staff have received verbally from NAIOP is that they want flexibility. *Bylaw 8385* provides this flexibility. NAIOP has also cautioned the City that it is moving very fast to implement a point system that hasn't been tested financially and that doesn't incorporate all of the other sustainability initiatives. Staff's response to this concern is that the bylaw will be reviewed within 2 years and can be amended relatively easily in the meantime to accommodate innovations and changes. Staff have also revised *Bylaw 8385* to address some of the specific questions or concerns expressed by one member of NAIOP (e.g., clarify the point system and how the storm drainage objective would work on a vacant parcel).

#### Architectural Institute of British Columbia (AIBC)

A number of detailed comments were received verbally from the Director of Practice at the AIBC, along with some general points from their Practice Board. The detailed comments essentially related to ensuring that *Bylaw 8385* is consistent with the *B.C. Building Code* and the responsibilities of registered professionals under this *Code*. A number of minor changes were made to the draft bylaw to reflect these detailed comments (e.g., using the word assurance rather than certification; putting the responsibility for the design, construction and field review of the bylaw on a registered professional; using gross floor area instead of building area; etc.). Generally, the AIBC seemed quite supportive of *Bylaw 8385*.

#### Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)

APEGBC's Building Code Committee will be reviewing *Bylaw 8385* at its regular meeting on September 16, 2008. This is the same date at which this report will be considered by Planning Committee. Preliminary indications from some of the professional engineers on the Building Code Committee is that the bylaw should not pose any problems for their members. If any significant comments arise from the APEGBC, they will be reported to Council on September 22, 2008 if this bylaw proceeds through Planning Committee.

#### British Columbia Society of Landscape Architects (BCSLA)

Both the President and Executive Committee of the BCSLA have reviewed a draft of *Bylaw 8385*. As suggested, changes have been made to the final bylaw to clarify that it is a landscape architect registered with BCSLA who must prepare any landscape plans and that other professionals (such as registered professional biologists) can be used. Overall, the BCSLA views the bylaw as a good thing that should be followed by other municipalities.

#### Changes Made to Draft *Bylaw 8385* Based on Internal Review and Concurrence Process

In addition to the changes noted above suggested by stakeholders, a number of other minor changes have been made to the draft *Bylaw 8385* based on the internal review and concurrence process. Some of these changes include:

- Clarifying that the bylaw applies to multiple building permits where the cumulative gross floor area is 2,000 m<sup>2</sup> (21,529 ft<sup>2</sup>) or more (this will avoid an applicant circumventing the bylaw by applying for a number of building permits each under 2,000 m<sup>2</sup> or 21,529 ft<sup>2</sup>).
- Clarifying the runoff control and storm water management objective and the landscaping enhancement objective in order to make both easier to interpret and implement.
- Adding a requirement that a covenant be registered on the title of the building site so that future owners are aware of their responsibilities to maintain in perpetuity, or until approved redevelopment, the green roof or other options located on the parcel.
- Including an Offences and Penalties section to the bylaw (which has provisions typical to recent City bylaws).

### Financial Impact

None at this time. The 2 year review of *Bylaw 8385* may require some consulting funds (e.g., to examine whether the objectives were achieved; to model the results of the chosen methods to implement the bylaw; to recommend changes or improvements to the bylaw; etc.). The amount and source of these funds will be determined in the future as part of Council's budgetary approval process.

### Conclusion

Council has directed that staff bring forward a bylaw regarding green roofs and other options (point system option with no specified variance process) for industrial and office building permit applications outside the City Centre having a building area of over 2,000 m<sup>2</sup> (21,529 ft<sup>2</sup>) received after January 1, 2009. **Attachment 1** provides a summary of the key components of this bylaw, which has been prepared in consultation with the NAIOP, UDI, AIBC, APEGBC and BCSLA. Rather than include the point system in the bylaw, it is proposed to be described in a bulletin. **Attachment 2** is a draft of the point system that would be included in this bulletin. It is recommended that *Bylaw 8385* be introduced and given three readings. The bylaw could then be adopted at the next regular Council meeting. The bulletin would be finalized by staff before January 1, 2009.



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HB:cas

SUMMARY OF BYLAW 8385		
Component	Description	Rationale
Application	<ul style="list-style-type: none"> <li>Industrial or office uses</li> <li>Building Permits (BPs)</li> <li>Outside the City Centre</li> <li>Gross floor area over 2,000 m<sup>2</sup> (21,529 ft<sup>2</sup>)</li> <li>BPs received after January 1, 2009</li> <li>Bylaw does not apply to residential &amp; commercial uses or to existing building</li> </ul>	<ul style="list-style-type: none"> <li>Residential &amp; commercial uses covered by rezoning and DP processes</li> <li>City Centre covered by proposed new <i>City Centre Area Plan (CCAP)</i></li> <li>Gross floor area consistent with City Policy on civic buildings</li> <li>Gives developers &amp; design community time to prepare for the bylaw</li> </ul>
Exemptions	<ul style="list-style-type: none"> <li>Internal renovations or alterations</li> <li>Exterior renovations or alterations</li> <li>Temporary buildings (e.g., sales trailers)</li> <li>Existing building where building addition involved</li> </ul>	<ul style="list-style-type: none"> <li>Unnecessary to regulate internal renovations, exterior alterations and temporary buildings</li> <li>Clarifies that bylaw applies to new building area only on building additions</li> </ul>
Interpretation	<ul style="list-style-type: none"> <li>Use definitions in the City's <i>Building Regulation Bylaw</i></li> <li>Define gross floor area (outer surface of exterior walls and midpoint of interior walls)</li> <li>Define green roof as being at minimum an extensive green roof</li> </ul>	<ul style="list-style-type: none"> <li>Avoid having to repeat common definitions to both bylaws</li> <li>Needed to determine if bylaw applies</li> <li>Establishes a minimum for a green roof and allows for more intensive (heavily landscaped/used) green roofs</li> </ul>
Objectives	<ul style="list-style-type: none"> <li>20% reduction in total annual volume of storm water runoff from the building that would enter the City's system by means of conventionally designed and constructed roof drains conducting storm water from a totally impermeable roof of equal area</li> <li>Amount of landscaping required in the <i>Zoning and Development Bylaw</i> doubled</li> </ul>	<ul style="list-style-type: none"> <li>Reasonable target to make an impact on the City's drainage system</li> <li>Target based on proposed green roof and other alternatives elsewhere</li> <li>Minimal landscaping currently required</li> <li>Increased landscaping provides green space and improves the development</li> </ul>
Verification of Compliance	<ul style="list-style-type: none"> <li>Registered professional (architect or engineer) certifies how objectives achieved</li> <li>Landscape Architect registered with B.C. Society of Landscape Architects required to prepare any landscape plans</li> <li>Other persons with appropriate training and experience can be used (e.g., registered biologist or environmental consultant)</li> </ul>	<ul style="list-style-type: none"> <li>Onus is on registered professional to provide assurance of design, construction and field review</li> <li>Landscape plans must be prepared by qualified landscape architects</li> <li>Responsibility rests with architect or engineer (not other professionals or City staff)</li> </ul>
Deemed Compliance	<ul style="list-style-type: none"> <li>Green roof covering at least 75% of the roof area of the building or building addition to which this bylaw applies is designed, constructed, operated and maintained</li> <li><i>LEED Silver</i> certification or equivalency, including <i>LEED Storm Water Management Credit</i>, is obtained for the building or building addition</li> <li>Combination of systems designed, constructed, operated and maintained such that the runoff control and storm water management objective <u>and</u> landscaping enhancement objective <u>or</u> green building initiatives are achieved</li> </ul>	<ul style="list-style-type: none"> <li>100 points for green roof or <i>LEED Silver</i> and <i>LEED Storm Water Management Credit</i> because green roofs increase the landscaping and <i>LEED</i> results in green building</li> <li>70 points if other systems used to meet runoff control and storm water management objective in order to require other objectives to be achieved</li> <li>50 points if landscaping enhancement used for local food production or outdoor amenity space or to protect, enlarge or enhance an ESA - reflecting City's preferences</li> <li>30 points if other landscaping enhancement or green building initiatives selected to meet multiple objectives and give applicant flexibility</li> </ul>
Off-Site Options	<ul style="list-style-type: none"> <li>Equivalent landscaping to rooftop parking and increase in amount of landscaping for local food production, outdoor amenity space and/or ESA can be provided off-site</li> <li>Off-site property must be owned by the City</li> <li>Council must approve off-site option</li> </ul>	<ul style="list-style-type: none"> <li>Other options more suitable on-site and not easily replicated off-site</li> <li>Off-site options located on City property to ensure on-going maintenance</li> <li>Discretion left to Council to determine when off-site option will be considered</li> </ul>
Legal Obligations	<ul style="list-style-type: none"> <li>Minimum 10 year written commitment for local food production or outdoor amenity</li> <li>ESA protected by registered covenant</li> <li>Covenant registered on title for on-going maintenance by owners</li> </ul>	<ul style="list-style-type: none"> <li>Legal commitment difficult if dealing with volunteer food production groups</li> <li>Outdoor amenity space will be secured on Building Permit plans</li> <li>ESA and maintenance need covenant</li> </ul>
Maintenance Responsibilities	<ul style="list-style-type: none"> <li>Property owner – green roofs and all other on-site options</li> <li>City of Richmond – if off-site option approved by Council</li> </ul>	<ul style="list-style-type: none"> <li>Onus on property owner for all on-site works</li> <li>City responsible for rare cases where off-site works approved</li> </ul>



DRAFT POINT SYSTEM TO BE INCLUDED IN BULLETIN TO BE RELEASED WITH BYLAW 8385 100 POINTS MINIMUM REQUIRED		
Option (Must chose at least one)	Methods	Total Number of Points
1. Green Roof	a) Extensive green roof or b) Intensive green roof, which could be used for local food production or outdoor amenity space	100 points
2. Build to LEED	a) Minimum LEED Silver certification or equivalency and meet the LEED Storm Water Management Credit b) Other LEED Credits that are encouraged but not required to be met include the LEED Renewable Energy Credit, LEED Green Power Credit and LEED Optimize Energy Performance Credit	100 points
3. Reduce Runoff by any one or combination of methods besides 1. Green Roof or 2. Build to LEED	a) Rainwater and detention cistern b) Permeable pavers or asphalt in the parking areas and manoeuvring aisles, not loading bays or drive aisles used by truck traffic c) Bioswale d) Partial green roof that does not address mandatory objective by itself e) Gravel ballast and other innovative roof structures f) Other methods	70 points
Secondary Objective: Minimum double the amount of landscaping required in the Zoning and Development Bylaw		
Option (May chose one or both)	Methods	Total Number of Points
1. Rooftop Parking	a) Parking on the roof and equivalent area of intensive landscaping at grade	50 points
2. Enhanced Landscaping by any one or combination of a) to e) methods	a) Area is used for local food production, outdoor amenity space and/or as an environmentally sensitive area	50 points
	b) Vertical landscaping on at least 50% of the length of the walls visible from any highway, public trail or natural watercourse (which could, but doesn't need to be used for local food production)	30 points
	c) Trees in the staff and visitor parking area to provide 50% canopy cover in 10 years d) Other methods e) Intensive landscaping including native species in the rainwater and detention cistern, bioswale or other methods used for runoff control and storm water management	15 points
Bonus/Optional Objective: Encourage green building initiatives		
Non-Mandatory Option (May chose more than one)	Methods	Total Number of Points
1. Energy & Atmosphere LEED Credits	a) <i>LEED Renewable Energy Credit</i> – supply at least 20% of the building's total energy use (as expressed as a fraction of annual energy cost) through the use of on-site renewable energy sources b) <i>LEED Green Power Credit</i> – provide at least 50% of the building's regulated electricity from renewable sources by engaging in at least a 2-year renewable energy contract c) <i>LEED Optimize Energy Performance Credit</i> – reduce building design energy cost compared to the energy cost of the reference building for energy systems regulated by standards stated in LEED	30 points

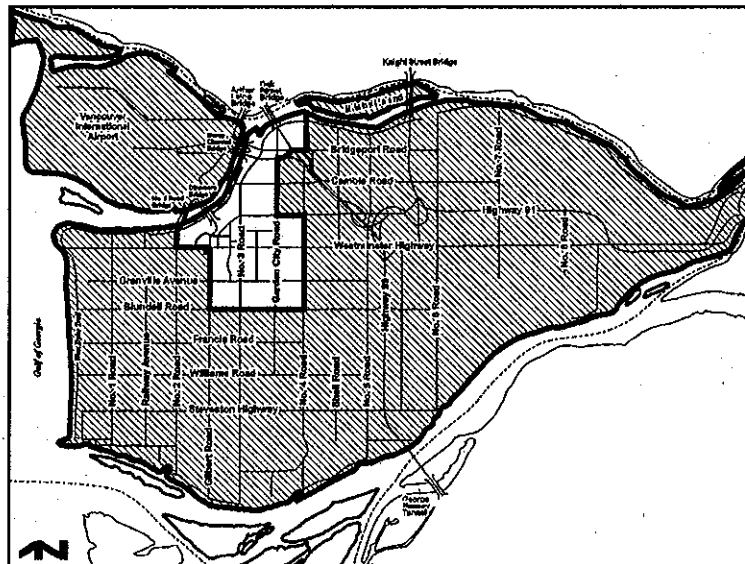


**Green Roofs and Other Options Involving Industrial and Office Buildings  
Outside the City Centre Bylaw 8385**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

Application

1. This bylaw shall apply to every building or building addition:
  - (i) that will contain industrial or office uses in all or part of the building or building addition, as indicated in the building permit application;
  - (ii) where those industrial or office uses will occupy a gross floor area of 2,000 m<sup>2</sup> (21,529 ft<sup>2</sup>) or more, regardless of the number of building permits issued to authorize the construction of the building or building addition; and
  - (iii) within the area shown shaded on the following map.



2. This bylaw does not apply to:
  - (i) internal renovations or alterations to existing buildings;
  - (ii) exterior renovations or alterations to existing buildings;
  - (iii) temporary buildings permitted under the City's Building Regulation Bylaw; and
  - (iv) the existing building where a building addition is involved.

### In-Stream Applications

3. This bylaw does not apply to any building for which a Building Permit application was received prior to January 1, 2009.

### Interpretation

4. Definitions in the City's Building Regulation Bylaw shall be used to interpret this bylaw.
5. In this bylaw:
  - “Gross floor area” means the horizontal area of all or part of every building containing industrial or office uses measured above grade to the outer surface of the exterior walls, and to the midpoint of interior walls separating industrial or office uses from other uses.
  - “Green roof” means a professionally designed roofing system that allows for the propagation of rooftop vegetation and the retention of storm water while maintaining the integrity of the underlying roof structure and membrane, having a growing medium or soil depth of at least 2.54 cm (1 inch) planted with sedums, grasses or other vegetation that can withstand drought and excess water.

### Runoff Control and Storm Water Management Objective

6. Buildings to which this bylaw applies shall have a storm water management system designed, constructed, operated and maintained such that the total annual volume of storm water runoff entering the City's storm sewer or drainage system from the building site is reduced by at 20 percent of the volume that would enter the system by means of conventionally designed and constructed roof drains conducting storm water runoff from a totally impermeable roof of equal area, directly to the storm sewer or drainage system.

### Landscaping Enhancement Objective

7. Where, in addition to meeting the runoff control and storm water management objective in section 6, landscaping enhancements are proposed, parcels on which buildings subject to this bylaw are constructed shall be landscaped such that the area of any screening and landscaping buffer required for commercial and industrial buildings by the City's Zoning and Development Bylaw is duplicated by an equal area of landscaping elsewhere on the building site or, with the City's approval, on other land owned by the City.

### Deemed Compliance

8. Building permit applicants are deemed to have complied with sections 6 and 7 of this bylaw if:
  - i) a green roof covering at least 75 percent of the roof area of the building or building addition to which this bylaw applies is designed, constructed, operated and maintained, or
  - ii) a LEED Silver certification or equivalency, including the LEED Storm Water Management Credit, is obtained for the building or building addition; or

- iii) a combination of building and site features and systems described in sections 12 through 16 of this bylaw or otherwise proposed by the applicant is designed, constructed, operated and maintained such that the objective of section 6 and, if applicable, section 7 are met.
9. Nothing in this bylaw is intended to prevent applicants for Building Permits from complying with sections 6 and 7 by means not specified in this bylaw, or from designing and constructing their buildings so as to achieve other objectives in addition to sections 6 and 7.

#### Verification of Compliance

10. Every Building Permit application subject to this bylaw must be accompanied by assurance from a coordinating registered professional as to the substantial compliance with sections 6, 7 and 8, and the provision of any information indicated in sections 12 through 16 of this bylaw.
11. The Director, Building Approvals may require additional assurances from other registered professionals or persons who have appropriate training and experience in the application and use of the systems proposed to meet the requirements of this bylaw, as to the matters referred to in section 10.

#### Green Roof Requirements

12. Where a green roof is proposed to meet the requirements of this bylaw, the following shall apply:
- (i) a registered professional must be responsible for the design of the roof, must provide assurance that the roof is recognized by the Roofing Contractors Association of B.C. as being suitable for a green roof and must give a letter of assurance prior to issuance of a final inspection notice in respect of the building that the roof and landscaping have been installed in substantial compliance with the professional design;
  - (ii) a landscape architect registered with the B.C. Society of Landscape Architects must be involved in the design of the green roof, must undertake the necessary field review and must confirm in writing to both the registered professional and the City prior to issuance of a final inspection notice in respect of the building that the green roof has been installed in substantial compliance with the professional design;
  - (iii) the owner of the building must register a covenant on the title of the building site in favour of the City to indicate that the owner shall, in perpetuity or until approved redevelopment, maintain the green roof, planting media and plant material in accordance with generally accepted maintenance practices, replacing each as necessary to ensure that the roof performs as designed; and
  - (iv) the City may from time to time, but not more often than once per calendar year, require the owner to provide evidence that the green roof has been inspected by a registered professional and in the registered professional's opinion is being

properly maintained so as to perform its storm water management and building protection functions.

#### LEED Requirements

13. Where the owner proposes to build using the LEED rating system and credits in order to meet the requirements of this bylaw, the following shall apply:
- (i) the LEED Green Building Rating System established by the Canada Green Building Council, as revised from time to time, shall be used; and
  - (ii) a registered professional, accredited in LEED, must be involved in the professional design of the building, and must provide assurance that the project design complies with the LEED requirements and qualifies for the LEED Storm Water Management Credit, and the undertaking of the necessary field review, and must advise the City in writing either when the building has been certified by the Canada Green Building Council or prior to issuance of a final inspection notice in respect, that LEED Silver rating or better has been met by way of equivalency without formal certification.

#### Other Runoff Requirements

14. Where roof or ground runoff is proposed to be reduced in order to meet the requirements of this bylaw by means other than by the provision of a green roof or using the LEED rating system and credits, the following shall apply:
- (i) a registered professional must be responsible for the design of the storm water management works for the building site, must provide assurance that the design will reduce storm water runoff as required by this bylaw, must undertake the necessary field review, and must provide assurance prior to issuance of a final inspection notice in respect of the building that the storm water runoff from the building site as constructed will be in substantial compliance with the professional design;
  - (ii) if landscaping features such as permeable pavers or asphalt are proposed, a landscape architect registered with the B.C. Society of Landscape Architects must prepare a plan of the landscaping features, must undertake the necessary field review, and must confirm in writing to both the registered professional and City prior to occupancy of the building that the landscaping features have been installed in substantial compliance with the approved landscaping plan and do not involve the use of invasive species;
  - (iii) any permeable pavement system must only be located in the parking areas and manoeuvring aisles, and must not be located in the loading bays or drive aisles used by truck traffic and must be capable of bearing the weight of a fire truck specified by the City if the parking area is used for fire fighting access to any building;
  - (iv) any bioswale must be located on the parcel on which the building or addition is to be constructed, must not interfere with the construction, operation or maintenance of works constructed pursuant to the City's Subdivision Bylaw, and

- must not interfere with or overlap any screening and landscaping area required by the City's Zoning and Development Bylaw;
- (v) if a bioswale is to be landscaped, a landscape architect registered with the B.C. Society of Landscape Architects must prepare a plan of the landscaping features in consultation with a registered professional biologist, the landscaping shall be comprised of native plant species, and the landscape architect and registered professional biologist must undertake the necessary field review and must confirm in writing to both the registered professional and the City prior to issuance of a final inspection notice in respect that the landscaping has been installed in substantial compliance with the approved landscaping plan and does not involve the use of invasive species; and
  - (vi) the owner of the building must register a covenant on the title of the building site in favour of the City to indicate that the owner shall maintain any storm water management works, landscaping features and structural elements supporting such features, permeable pavers and asphalt, and bioswale in accordance with generally accepted building, landscaping and engineering maintenance practices so that the design volume of storm water runoff from the site will, in perpetuity or until approved redevelopment, not be exceeded.

#### Rooftop Parking Requirements

15. Where rooftop parking is proposed to meet the requirements of this bylaw, the following shall apply:
- (i) an intensive, pervious landscaped area equivalent in area to the area that would otherwise have been used for parking spaces, parking access and manoeuvring aisles must be provided at grade on the building site or, with the City's approval, on other land owned by the City;
  - (ii) a landscape architect registered with the B.C. Society of Landscape Architects must prepare a landscaping plan of the landscaped area;
  - (iii) a landscape architect registered with the B.C. Society of Landscape Architects must undertake the necessary field review of the landscaped area if it is located on the building site and must confirm in writing to both the registered professional and the City prior to issuance of a final inspection notice in respect of the building that the landscaping has been installed in substantial compliance with the approved landscaping plan and does not involve the use of invasive species;
  - (iv) a registered professional must be responsible for the design of the building and the necessary field review of the rooftop parking and must provide assurance prior to issuance of a final inspection notice in respect of the building that the rooftop parking and equivalent area of landscaping have been installed in substantial compliance with the professional design;
  - (v) the professional design drawings must indicate that the proposed number of off-street parking spaces and all access and manoeuvring aisles comply with the requirements of the City's Zoning and Development Bylaw; and

- (vi) if the equivalent landscaped area is located on the building site, the owner must register a covenant on the title of the building site in favour of the City to indicate that the owner shall maintain the landscaping in accordance with generally accepted landscaping maintenance practices, such that the design increase in the amount of landscaping above and beyond the requirements of the City's Zoning and Development Bylaw will be attained in perpetuity or until approved redevelopment.

#### Enhanced Landscaping Requirements

16. Where enhanced landscaping is proposed to meet the requirements of this bylaw, the following shall apply:
- (i) a landscape architect registered with the B.C. Society of Landscape Architects must prepare a plan of the enhanced landscaping and the approved landscaping plan must not include the use of invasive species;
  - (ii) if the enhanced landscaping is to be used for local food production and is located on the building site, the owner must provide evidence in writing of a ten-year commitment by the owner or another party having an arrangement with the owner to use the area for urban agriculture, garden plots or other food production purposes;
  - (iii) if the enhanced landscaping is to be used for outdoor amenity space and is located on the building site, the owner must provide evidence in writing that the area will be used for a minimum ten years as an outdoor amenity space for persons employed in industrial or office space in the building;
  - (iv) if the enhanced landscaping is to be used to protect, enlarge or improve an environmentally sensitive area (ESA) and is located on the building site, the landscaping shall be comprised of native species and the area must be protected as such in perpetuity by a legal covenant registered on the title of the building site in favour of the City;
  - (v) with the City's approval, the area to be used for a local food production or outdoor amenity space or an environmentally sensitive area may be located on other land owned by the City;
  - (vi) if vertical landscaping is proposed, it must be planted on the walls of the building that are visible from any highway, public trail or natural watercourse such that portions of such walls equivalent in total length to at least 50% of the overall length of the walls are planted;
  - (vii) a landscape architect registered with the B.C. Society of Landscape Architects must undertake the necessary field review of the enhanced landscaping if it is located on the building site and must confirm in writing to both the registered professional and the City prior to issuance of a final inspection notice in respect of the building that the landscaping has been installed in substantial compliance with the approved landscaping plan and does not involve the use of invasive species;

- (viii) if additional trees are proposed to be planted in the parking area of the site, a landscape architect registered with the B.C. Society of Landscape Architects must confirm in writing to both the registered professional and the City at the time the application for Building Permit is made and prior to issuance of a final inspection notice in respect of the building after the trees have been planted and the planting has been inspected, that the trees will provide 50% canopy cover of the parking area within 10 years of planting if maintained in accordance with generally accepted landscape maintenance practices as supplemented by any particular recommendations of the landscape architect;
- (ix) a registered professional must be responsible for the preparation of a plan of the enhanced landscaping and the field review of the enhanced landscaping, and must provide assurance prior to issuance of a final inspection notice in respect of the building that the landscaping has been installed in substantial compliance with the professional design; and
- (x) if the enhanced landscaping is located on the building site, the owner of the parcel must register a covenant on the title of the building site in favour of the City to indicate that the owner shall ensure that the enhanced landscaping is maintained in accordance with generally accepted landscaping maintenance practices and the recommendations of the landscape architect, such that the design increase in the amount of landscaping above and beyond the requirements of the City's Zoning and Development Bylaw will be attained in perpetuity or until approved redevelopment.

#### Offences and Penalties

17. Any person who:
- (i) violates or who causes or allows any of the provisions of this bylaw to be violated; or
  - (ii) fails to comply with any of the provisions of this bylaw, or any other bylaw or applicable statute;
  - (iii) neglects or refrains from doing anything required under the provisions of this bylaw; or
  - (iv) makes any false or misleading statement in connection with this bylaw,
- is deemed to have committed an infraction of, or an offence against, this bylaw, and is liable on summary conviction, to the penalties provided for in the Offence Act, in addition to the costs of the prosecution, and each day that such violation is caused or allowed to continue constitutes a separate offence.

#### Bylaw Citation

18. This Bylaw may be cited as **“Green Roofs and Other Options Involving Industrial and Office Buildings Outside the City Centre Bylaw 8385”**.



FIRST READING

SECOND READING

THIRD READING

ADOPTED

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CITY OF RICHMOND
APPROVED by Director

APPROVED by Solicitor


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MAYOR

\_\_\_\_\_  
CORPORATE OFFICER