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## Environmental Separation Design in Housing and Small Buildings

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This bulletin describes City building policy with respect to the application of Part 5 - Environmental Separation for Housing and Small Buildings<sup>i</sup> to buildings falling within the scope of Part 9 of the Building By-law and provides guidelines for permit submittals in this context.

### Background

The design of building envelope and environmental separation features is an evolving field and historically simple buildings have become increasingly complex, due in part to the need for achieving greater air tightness. In response, a number of projects have sought to design Housing and Small buildings<sup>ii</sup> to the requirements of Part 5 of the Building By-law.

At present, the specific requirements of Part 9 of the Building By-law do not provide general provisions to proceed according to Part 5 principles where those buildings fall within the scope of Part 9 of the Building By-law. However, it is generally recognized that the design principles of Part 5 represent an enhanced level of performance relative to the Part 9 requirements due to the involvement of *registered professionals*. Where it is acceptable to the Chief Building Official, a building required to be designed to Part 9 principles may at its outset be designed to the requirements of Part 5 of the Building By-law. Nonetheless, designers must consider that Part 5 was not written specifically with Part 9 prescriptive requirements in mind. As a consequence, specific design elements complying with Part 5 may have inadvertent impacts on other aspects of the building governed by Part 9 or other requirements of the Building By-law.

### Scope and Context

As the building enclosure encompasses the entire building and touches upon many aspects of a building's design, the scope of building enclosure work may necessarily be broad. Envelope design or rehabilitation may include stair replacements, insulation upgrades, door and window replacements, or similar works. As a consequence, this could lead to potentially significant downstream impacts on the Code compliance of the building, including items not generally covered as part of the scope of building envelope services. Consequently, building owners are advised that the further engagement of an Architect as the Coordinating Registered Professional (CRP) and primary Registered Professional of Record (RPR) is strongly recommended. This will provide maximum flexibility in the design and ensure that the requirements of the project are well looked after.

Existing professional guidelines from the regulatory bodies overseeing building envelope work<sup>iii</sup> identify that a Building Envelope professional may be either a registered architect or an engineer, and that the general scope of work provided by this professional includes design with respect to Sections 5.4, 5.5, and 5.6 of the Building By-law. However, it is also recognized that the design details must be coordinated with all of the other involved designers and professionals to avoid or resolve the consequences of these design choices.

Some building envelope professionals, recognizing the potential for this scope of work to creep beyond the normal practice of building envelope design, try to restrict the scope of their review

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as they may not recognize or have the capacity to resolve these other impacts. However, the envelope professional may not choose to avoid their responsibility for coordination, and must assist the primary designer so that appropriate assurances can be provided to Chief Building Official that the impacted items have been addressed in Code compliant manner. The issuance of a Schedule D alone is not sufficient to demonstrate this coordination, as the Schedule D covers only aspects of air leakage, vapour diffusion, and precipitation ingress.

General Requirements

Given these concerns, it is the view of the Chief Building Official's office that a design complying with Part 5 in lieu of the corresponding prescriptive requirements of Part 9, must demonstrate at the outset that the *building* envelope has been designed in accordance with Part 5 of the Building By-law and that any consequent concerns pertaining to those interactions with Part 9 have been resolved.

A design may demonstrate an intent to comply with Part 5 design principles through the submission of design documentation prior to building permit issuance including:

1. Professional schedules from the:
  - a. *Coordinating Registered Professional* (CRP) - Schedule A,
  - b. *Registered Professional of Record* (RPR) taking responsibility for building architectural design and related elements - Schedule B (Arch.), and
  - c. *Registered professional* providing enhanced building envelope design in accordance with Part 5 of the Building By-law - Schedule D;
2. Architectural design drawings sealed by the RPR of record showing the intended assembly designs and details, and coordinated with the designs of the Envelope professional;
3. Relevant and accurate building envelope details signed and sealed by the registered professional providing enhanced building envelope design services are to accompany the architectural drawings;
4. A letter demonstrating that the *registered professional* providing enhanced building envelope design services has
  - a. Designed the entire building for Part 5 compliance, or in the case of existing portions of the building -designed all areas within the scope of work in accordance with Part 5, and demonstrate that the remainder of the building has been fully reviewed for compliance according to Part 5 design principles,
  - b. Considered the implications of the Part 5 design as it interfaces with or otherwise affects the prescriptive requirements of Part 9;
5. The registered professional providing enhanced building envelope design services shall provide acceptable qualifications demonstrating that they are capable of carrying out the required scope of work.

Owner and Professional Responsibilities

The intent to apply Part 5 on a building required to be designed to Part 9, is contingent upon owner (or their representative) engaging the appropriate registered professionals at the beginning of the project. The registered professionals are expected to provide coordination, design, supervision, and field review services in accordance with the corresponding professional guidelines from the regulatory bodies governing such work. Consequently, once a building permit has been issued, the Chief Building Official will not accept subsequent permit revisions to convert from a Part 9 to Part 5 design or the reverse without a compelling reason to do so.

As per the professional guidelines on professional practice, professionals are expected to coordinate the design and construction, and carry out field reviews at key stages of construction.

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This may include inspections carried out prior to the completion of the building sheathing, insulation, vapour barrier, and boarding stages, as well as other inspections that may be appropriate to the specific form of construction. These reviews are to be documented, and will be requested by the Building Inspector as a precondition to inspection or occupancy. Where deviation from the approved building permit are intended or have occurred, it is the responsibility of the *registered professionals* to advise City in a timely manner and take appropriate action which could include a submission for revision to the building permit.

Additional follow up reviews may be conducted by the City for small building and houses designed to Part 5 principles. If there is a demonstrable record of poor practice or unsuitable qualifications on the part of the designers, the Chief Building Official may choose to require third party review of the design, or may refuse to accept a Part 5 design as part of a project normally required to comply with the requirements of Part 9 of the Building By-law.

(Original signed by)

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<sup>i</sup> The term "Housing and Small Buildings" refers to a *building* required to comply with Part 9 of the Building By-law as identified in Division A, Article 1.3.3.3.

<sup>ii</sup> *Housing* - means a 1 or 2 family dwelling with or without integral secondary suite (or lock-off unit) in accordance with Section 9.37. of the Building By-Law.

<sup>iii</sup> The referenced guidelines in this document are those published by the Architectural Institute of British Columbia or the Engineers and Geoscientists of BC.