


Building Enclosure Practice Guidelines

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Agenda

- Building Enclosure Practice Guidelines
 - ▶ A bit of history
 - ▶ Organization
 - ▶ Highlights
 - ▶ Key points




History

- Born out of the leaky condo era
- BEP and mandate for involvement was one part of the response
 - ▶ Best practice guides, training programs
 - ▶ HPO (warranty, licensing, research & education)
- 1999 initial agreement with AIBC regarding the role and rules for shared practice area




Current Guidelines

- Endorsed by AIBC
- Address current BCBC mandate regarding professional responsibilities and letters of assurance
- Various types of projects and services, and Building Enclosure Engineer's (BEE) role



Organization

- Definitions
- Purpose and Scope
- Qualifications of a BEE
- BEE technical practice guidelines
- Project roles and responsibilities




Definitions

- The 4 R's
 - ▶ Rehabilitation

The process of undertaking a program of comprehensive and systemic reconstruction of the building enclosure assemblies and details, so that it can fulfill its originally intended functions. Rehabilitation projects are most often initiated because of premature failure.
 - ▶ Renewal

The process of undertaking a program of systemic reconstruction or replacement of aged elements of the building enclosure. Renewal projects are very similar in scope to rehabilitation projects but are not associated with premature failure; rather, the work is needed due to normal wear and aging associated with an element reaching the end of its service life.



Definitions

- The 4 R's

- ▶ Renovation

The process of undertaking improvements or changes to the *building enclosure* as a part of a more general program for the building related to changes in functional, performance or occupancy requirements rather than premature failure or the need for *renewal*.

- ▶ Repair

The process of undertaking the reconstruction or replacement of specific elements of the *building enclosure* so that it can fulfill its originally intended functions. Unlike *rehabilitation*, a *repair* is undertaken because of a premature failure but is non-systemic and, therefore, focussed on one specific aspect of the construction, or is localized to one area of a building.



Purpose: Section 2.1

- 2.1.1] These Guidelines set out the standards of practice that a *building enclosure engineer (BEE)* must generally follow and meet when providing *building enclosure engineering services* for building projects. See Section 2.3.
- 2.1.2 These Guidelines also address typical project organization and responsibilities of the various stakeholders; quality assurance/quality control; and professional registration and education, training and experience.
- 2.1.3 Building enclosure expertise is shared with architects, so these Guidelines provide some guidance regarding this shared responsibility for various types of building projects.



Scope: Section 2.2

- 2.2.1 These Guidelines apply to the practice of *building enclosure engineering*; in particular, this practice includes the requirements of Part 5, 9 and 10 (BCBC only) of the applicable *building code* as well as *local regulations*.
- 2.2.2 A *BEE* must exercise professional judgment when providing services. The application of these Guidelines will vary depending on the circumstances; however, the services must not vary significantly from the overall intent of these Guidelines See section 2.3.
- 2.2.3 These Guidelines can be used to assist in establishing the objectives, scope of professional services, level of effort and terms of reference for an agreement between a *BEE* and his or her *client*; however, these Guidelines are not intended for use as part of the contract between a *BEE* and his or her *client*.
- 2.2.4 These Guidelines also take into account the commitments that the *AHJs* may require from *BEEs* as set out in the *schedules*.
- 2.2.5 These Guidelines relate to the provision of services for new buildings and existing buildings, and reflect the *AIBC/APEGBC Building Enclosure Agreement*.



Compliance: Section 2.3

- 2.3.1 Notwithstanding the purpose and scope of these Guidelines, a *member's* failure to follow one or more of these Guidelines does not necessarily mean that the *member* has failed to meet his or her professional obligations. Such decisions depend upon the *member's* exercise of professional judgment including weighing facts and circumstances particular to a project. Determining whether a *member* has met his or her professional obligations will involve a comparison of the *member's* services to these Guidelines and the expected actions of a reasonable and prudent *member* in similar circumstances.



Qualifications: Section 3.0

- Core competencies
- Experience

- 3.0.1 Appropriate qualifications for a *BEE* must include core competencies which are considered basic and fundamental to the provision of *building enclosure engineering services*. These core competencies include theoretical and academic knowledge, as well as practical experience as described in these Guidelines. To achieve designs that will meet the desired performance objectives for the *building enclosure*, the *BEE* must also effectively translate these competencies into practice, and must be aware of and recognize the numerous factors associated with building projects that may affect these designs.



Core Competencies: Section 3.1

- ▶ Building Codes and Standards
- ▶ Theoretical and Technical Knowledge
 - Materials
 - Building Physics
 - Components, assemblies and other building systems
- ▶ Construction Document Preparation and Design Review
- ▶ Investigation, Assessment and testing
- ▶ Construction Field Review



Experience: Section 3.2

- ▶ Application of Knowledge
- ▶ Professional Qualifications
 - No specialist designation
 - APEGBC member 3 years
 - Minimum 5 years documented building enclosure experience demonstrating core competencies
 - Minimum 2 years in BC
 - Evidence of building science education
- ▶ Professional Development
- ▶ Reference Material



BEE Technical Service Guidelines

- Three general service areas described:
 - ▶ Construction project services
 - ▶ Indoor environmental separations, below grade, secondary structural, snow and ice, acoustics, heat transfer, energy and durability
 - ▶ Condition assessments, asset management, investigations, second opinions, warranty reviews



Project Roles & Responsibilities

- New construction or renovations
- Rehabilitation or renewals
 - ▶ Architect as the RPR
 - ▶ BEE as the RPR
- Repairs



ROLES	NEW BUILDING CONSTRUCTION OR RENOVATIONS	BUILDING ENCLOSURE REHABILITATION OR RENEWAL – Scenario 1	BUILDING ENCLOSURE REHABILITATION OR RENEWAL – Scenario 2	BUILDING ENCLOSURE REPAIRS	OTHER PROJECTS (Investigations, Condition Assessments, etc.)
COORDINATING REGISTERED PROFESSIONAL (CRP)	<ul style="list-style-type: none"> • Either an architect or a professional engineer may fulfil the CRP role 	<ul style="list-style-type: none"> • A CRP may or may not be required for the project depending on the need for multiple RPRs • Where required, the architect usually fulfills the CRP role with the same responsibilities as for a new construction project 	<ul style="list-style-type: none"> • A CRP may or may not be required for the project depending on the need for multiple RPRs • Where required, a BEE usually fulfills the CRP role 	<ul style="list-style-type: none"> • A building permit is usually not required • Letters of Assurance and a CRP are not required for projects that do not require a building permit • The BEE must confirm that a building permit is not required for each project before proceeding on this basis • If a permit is required then the rules for rehabilitation projects apply 	<ul style="list-style-type: none"> • Letters of Assurance and a CRP are not required for projects that do not require a building permit
REGISTERED PROFESSIONALS OF RECORD (RPR)	<ul style="list-style-type: none"> • An architect must act as the RPR for the building enclosure and submit Schedules B and C-B • The BEE must not submit Schedules B or C-B 	<ul style="list-style-type: none"> • An architect must act as the RPR for the building enclosure and submit Schedules B and C-B • The BEE must not submit Schedules B or C-B • Other RPRs may be required depending on the scope 	<ul style="list-style-type: none"> • When a BEE is the RPR for the building enclosure, the BEE submit Schedules B and C-B • Other RPRs may be required depending on the scope 	<ul style="list-style-type: none"> • Not required. See above. 	<ul style="list-style-type: none"> • Not required. See above.
SUPPORTING REGISTERED PROFESSIONALS*	<ul style="list-style-type: none"> • If required by the RPR, the BEE may submit Supporting Schedules S-B and S-C (as defined) for the scope of services permitted in support of the architect's Schedules B and C-B 	<ul style="list-style-type: none"> • The BEE may submit Supporting Schedules S-B and S-C (as defined) for the scope of services provided and in support of the architect's Schedules B and C-B • Other SRPs may be required depending on the scope 	<ul style="list-style-type: none"> • An architect must review the scope of the project for the purposes of identifying the need for other RPR involvement; confirmation of this role can be provided using a supporting schedule • Other SRPs may be required depending on the scope 	<ul style="list-style-type: none"> • Other SRPs may be required depending on the scope of the project and the expertise of the BEE 	<ul style="list-style-type: none"> • May be required depending on the scope of project, and expertise of the BEE • Supporting schedules S-B and S-C could be utilized if desired but are not required
CONSTRUCTION DOCUMENTS	<ul style="list-style-type: none"> • The architect RPR must prepare and take responsibility for the construction documents associated with the building enclosure 	<ul style="list-style-type: none"> • The architect RPR must prepare and take responsibility for the construction documents associated with the building enclosure 	<ul style="list-style-type: none"> • The BEE acts as RPR for the building enclosure and must prepare and take responsibility for the construction documents associated with the building enclosure 	<ul style="list-style-type: none"> • As a minimum, some sketches will be required to describe the scope of work, provide necessary details, and specify the materials to be used 	<ul style="list-style-type: none"> • Not typically required



New Construction or Renovations

- CRP – Architect or Engineer
- RPR for BCBC Schedule B & C-B Architectural Items 1 to 24:
 - ▶ Not an Engineer
 - ▶ Must be an Architect
- What can a BEE do?
 - ▶ Supporting Registered Professional: SRP
 - ▶ Schedule S-B and S-C



Supporting Registered Professional

- Could be used for many specialized engineering or architectural services in support of an RPR as an alternate accountability document
- Not part of BCBC (AIBC & APEGBC)
- Schedules S-B and S-C
 - ▶ Scope must be customized
 - ▶ Submitted to the RPR, not the AHJ



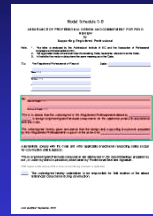
BEE as a SRP

- Examples:
- 1.7 Sound control
- 1.17 Dampproofing and/or waterproofing of walls and slabs below grade
- 1.18 Roofing and Flashing
- 1.19 Wall cladding systems
- 1.20 Condensation control and cavity ventilation
- 1.21 Exterior Glazing
- 1.22 Integration of building envelope components
- 1.23 Environmental separation requirement (Part 5)
- 1.24 Building envelope, Part 10/ASHRAE requirements



Model Schedule S-B

- Accountability document not a schedule
- RPR named and must administrate
- Client named
- Scope of services related to the S-B is described



This is to advise that the undersigned is the Registered Professional named by _____ to design engineering/architectural components for the captioned project in accordance with the Code.

The undersigned hereby gives assurance that the design and supporting documents prepared by this Registered Professional in support of the project for _____

comply with the area of responsibility, e.g. seismic restraint, fire resistance, acoustic properties, structural aspects, substantially comply with the Code and other applicable enactments respecting safety except for construction safety aspects.



Enhanced BEE Services

- Some AHJ require enhanced BEE services
- Model Schedule D's, from AIBC Bulletin 34 are still used by some AHJ's
- Only Vancouver and Burnaby have building enclosure schedules (D-1/D-2, and E-1/E-2) that have been approved by APEGBC and AIBC
- These are "alternative" accountability documents not "BCBC Schedules", but unlike S-B and S-C's; submission to the AHJ may be required.



Rehabilitation, Renewal or Repair

- CRP – If required, Architect or Engineer
- RPR for BCBC Schedule B & C-B Architectural Items 1 to 24:
 - ▶ Could be an Engineer
 - ▶ Could be an Architect
 - ▶ May not be required
- Limitations
 - ▶ Core Competency
 - ▶ Engineer as a RPR will need review by an architect



Part 9 Buildings

- Letters of assurance not required by BCBC
- Some AHJs will request schedules for building enclosures for Part 9
 - ▶ Neither Schedules B and C-B, nor S-B and S-C are appropriate
- Use cautiously – modify wording to reflect service and accountability intended



Key Points

- Practice in areas of competency
 - ▶ Appropriate training and experience
- Understand roles and responsibilities for various types of projects
- Use Letters of Assurance and other schedules appropriately



Areas of Concern

- Heat transfer and energy competency
- Architect review for rehabilitation and renewals projects
- Practice outside areas of competency
 - ▶ Members need to know what they don't know



Key Documents

- On APEGBC website
 - ▶ Professional Practice Guidelines Building Enclosure Engineering Services
 - ▶ AIBC/APEGBC Practice Note 16: Professional Design and Field Review by Supporting Registered Professionals

