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BULLETIN 34: BUILDING ENVELOPE SERVICES – APPROPRIATE PROFESSIONAL PRACTICE

SECOND EDITION: APRIL 2007 (UPDATED JANUARY 2009)

(This second edition of Bulletin 34 replaces the first, December 2001 edition that was revised in August 2002. While fundamentally similar, it reflects new language in Part 5 of the British Columbia Building Code; cross-references recent AIBC bulletins; provides points of emphasis arising from experience; and contains minor syntax amendments. The Model Schedules D and C-D are updated. Substantive new content is flagged by sidebar. This update reflects the mutual endorsement of Bulletin 34 by the Association of Professional Engineers and Geoscientists of British Columbia.)

The information contained in this Bulletin is consistent with the understandings and agreements of the governing councils of both the Architectural Institute of British Columbia (AIBC) and the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) concerning terminology; respective roles; the scope and application of “Enhanced Building Envelope Services”; and “Joint Building Envelope Practice Points of Principle”. Refer also to AIBC Bulletin 31: “Buildings Requiring the Services of an Architect”, Bulletin 33: “Architecture and Engineering: Complementary Professions” which also includes the “Memorandum of Agreement Between APEGBC and AIBC”; and Bulletin 56: “Recommended Fees for Enhanced Building Envelope Services.”

Certain authorities having jurisdiction, clients, warranty providers or insurers require (and some architects choose to engage or have the client engage) a so-called “Building Envelope Professional” (BEP) in a supporting role, to provide “Enhanced Building Envelope Services” (EBES). The “EBES” are provided in addition and complementary to the project’s architect’s basic services, and may be provided by the project’s architect, another architect or a professional engineer.

Note that where a BEP independent of the architect is engaged on a project, this does not in any way relieve the architect from responsibility for the project, including design and field reviews of the building envelope. Such responsibility is primary and not transferable.

The terms “Building Envelope Professional” or “BEP” are not official designations or restricted terms. The terms are used for convenience within the design and construction industry — echoing the Vancouver Building Bylaw’s terminology. The terms are deemed to indicate (only) architects or professional engineers who are competent, by virtue of their education and experience, to provide Enhanced Building Envelope Services (EBES) and whose practices are focused accordingly.

The design and field review of a building envelope in all its integrated aspects (with corresponding assurances under applicable building codes), for new and renovated buildings within the purview of the *Architects Act* are the responsibility of the project's architect. Specialized services relating to the performance of building materials and assemblies is a discipline common to both the professions of architecture and engineering. The extent of use of these specialized services varies with the size and complexity of the building. Such services are called upon and coordinated by the project's architect in consultation with the client.

Specialized services for the rehabilitation (or remediation) of building envelope failures (distinct from building renovation projects) are being provided by both architects and professional engineers, often acting as both the prime consultant and the *Coordinating Registered Professional* for the remedial work.

Architects, BEPs and their clients are reminded of the importance of having mutually compatible contracts for professional consulting services, reflecting the roles and responsibilities outlined in this bulletin.

Following are three sections, which provide (I) Enhanced Building Envelope Services: Guidelines for Professional Practice; (II) Joint Building Envelope Practice: Points of Principle; and (III) two Model Schedules.

(I) ENHANCED BUILDING ENVELOPE SERVICES: GUIDELINES FOR PROFESSIONAL PRACTICE (*further to October 15, 2001 AIBC Council confirmation*)

1. SCOPE OF SERVICES: RANGE OF APPLICATION AND PROVISION

In consultation with members of both the AIBC and APEGBC and representatives of municipal building authorities, there has been a recognition that the types of buildings that may be most at risk are those with cladding systems over wood framing or light steel framing. As noted in the Barrett Commission report, the most severely impacted building type and the one in which the public has been most effected, is in residential buildings of all scales. The range of buildings for which "*Building Envelope Professionals*" (*BEPs*) are qualified and will provide "Enhanced Building Envelope Services" are as follows:

- **For all residential buildings**

Which contain more than two dwelling units, which are more than two storeys in building height or more than 600 s.m. in building area regardless of firewalls.

- **For all other buildings with a cladding system over wood framing or light steel framing**

BEPs must recognize that they may not be qualified to provide *BEP* services for the full range of project types.

(*Note*: an architect providing *BEP* services is required to do so through an AIBC Certificate of Practice, under the *Architects Act* and Bylaws.)

2. BASIC "ENHANCED BUILDING ENVELOPE SERVICES"

The role of the *BEP* is to provide review of the building envelope design and construction to the project's architect (or possibly a professional engineer on remediation projects) with respect to environmental separation and the performance of materials, components and assemblies of the building envelope. The statutory responsibility (including signing and sealing the British

Columbia Building Code's endorsed letters of assurance) for the design and field review of the construction of new buildings rests with the project's architect (**not a separate BEP**), except when a professional engineer is providing architectural services as permitted under the AIBC/APEGBC Memorandum of Agreement.

The usual phases of the *Basic Enhanced Building Envelope Services*, as discussed below, are generally organized in a consulting agreement according to the sequential stages of a typical project.

These enhanced services are intended to assist the *BEP* in addressing the Building Envelope performance issues around control of Air, Moisture and Precipitation outlined as acceptable solutions in Sections 5.4, 5.5 and 5.6 of Part 5 of Division B of the British Columbia Building Code.

For the purposes of this document, element means an assembly, component or material forming part of the building envelope, and performance means performance with respect to the above-noted Sections of Part 5 of Division B of the British Columbia Building Code.

2.1 CONCEPTUAL OR "SCHEMATIC" DESIGN PHASE

In the conceptual or schematic design phase, the *BEP* shall:

- 2.1.1 Attend, as required, meetings with the applicable Registered Professional and design team to obtain information regarding the functional, aesthetic, cost and scheduling requirements. The *BEP* review should focus on the Building Envelope elements and performance requirements defined in the above-noted Sections of Part 5 of Division B of the British Columbia Building Code.
- 2.1.2 If required, assist the *Coordinating Registered Professional (CRP)* in identifying the need for any specialist envelope consultants who may be required for the project.
- 2.1.3 Review the design criteria and air, moisture and precipitation loads for the building envelope assemblies in consultation with the applicable Registered Professional.
- 2.1.4 Review applicable codes, standards, regulations, restrictions, insurance requirements and other factors affecting the performance of the building envelope.
- 2.1.5 Review compatibility and interaction with other building systems.
- 2.1.6 Review the preliminary design concept, together with alternate design concepts where appropriate.
- 2.1.7 Consider the requirements of other Registered Professionals and provide information relating to the building envelope design, as they may reasonably require.

2.2 DESIGN DEVELOPMENT PHASE

In the design development phase, wherein the accepted conceptual design is developed in sufficient detail to enable commencement of the construction documents by all participants in the design team, the *BEP* shall:

- 2.2.1 Review preliminary drawing of such building envelope elements as: walls, windows (and glazed elements), roofs, balconies, decks, and typical interface details between elements of the building envelope.
- 2.2.2 Review durability of building envelope elements, and consider maintenance, renewals and service life requirements. Specific consideration should be given to the following items:
 - (a) Expected service life of the building envelope elements;

- (b) Consideration of the layering of building envelope elements, so that repair and replacement of elements with shorter service lives does not require the removal or replacement of items with longer service lives; and
- (c) Materials' compatibilities and resistance to various mechanisms of deterioration, given the nature, function and exposure of the materials.

2.3 CONTRACT DOCUMENTS PHASE

In the contract documents phase the *BEP* shall:

- 2.3.1 Review the construction documents to verify that they describe building envelope elements that achieve the performance criteria that were established during the Schematic Design Phase and further developed during the Design Development Phase.
- 2.3.2 Provide technical input into the specifications.
- 2.3.3 Assist in establishing testing and inspection requirements.
- 2.3.4 Assist in obtaining the required approvals, licences and permits, including preparation of the relevant documentation required by the authority having jurisdiction.
- 2.3.5 Complete, sign and seal Model Schedule D (attached) and submit to the architect of record. **Note that the architect of record should understand that the BEP's Model Schedule D is limited to Sections 5.4 (Air Leakage), 5.5 (Vapour Diffusion) and 5.6 (Precipitation) of Division B of the British Columbia Building Code.** It does not consider such other Sections of Part 5 such as:
 - 1. Heat transfer
 - 2. Surface water
 - 3. Moisture in the ground
 - 4. Sound transmission
 - 5. Structural attachment of cladding

2.4 CONSTRUCTION PROCUREMENT PHASE

In the bidding and negotiation phase the *BEP* shall:

- 2.4.1 Provide assistance to the applicable Registered Professional in preparing addenda to the design, and clarification of the construction documents as required.

2.5 CONSTRUCTION PHASE

In the construction phase, the *BEP* shall provide enhanced building envelope services for all building envelope elements that the *BEP* has reviewed in earlier project phases.

Some items reviewed by the *BEP* may also require review by other members of the design team or by testing or inspection agencies. Such work may include waterproof membranes, glazing, pre-cast concrete elements, welding, proprietary products, and primary and secondary structural elements.

Construction phase services shall include, but not necessarily be limited to the following, and may vary depending upon the complexity of the job and the experience of the contractor.

- 2.5.1 Attend construction meetings, as required.
- 2.5.2 Assist in confirming, reporting and scheduling procedures for testing and field reviews.

- 2.5.3 Assist in confirming that the qualifications of fabricators meet the specifications.
- 2.5.4 Assist in review of submittals for general compliance with the contract documents.
- 2.5.5 Assist with the review of building envelope-related shop drawings and other submittals for general conformance with the construction documents and the intent of the design.
- 2.5.6 Provide enhanced field review, visiting the site at sufficiently frequent intervals, appropriate to the stage of construction, and review a substantial number of the details (rather than just a representative sampling) to observe the quality and the progress of the construction of those elements reviewed by the *BEP*. The term “enhanced field review” is used to differentiate the level of review which a *BEP* shall provide, which supplements the level of field review and assurances which shall be provided by the architect and other registered professionals.

Note that the *BEP*'s enhanced field review does not replace the field review requirements of the architect and other consultants.

- 2.5.7 Review reports provided by material and component manufacturers, as well as other reports prepared by registered professionals reviewing building envelope elements.
- 2.5.8 Prepare site visit reports outlining observations and deficiencies in the work and bring them to the attention of the applicable Registered Professional.
- 2.5.9 Make site visit reports available to the *CRP* and the authority having jurisdiction upon request.
- 2.5.10 Assist in arranging for and observing the mock-up and/or testing of key envelope elements such as wall assemblies or window installations, where required.
- 2.5.11 Review the continuity of thermal insulation, moisture, air and vapour barriers.
- 2.5.12 Review drainage paths.
- 2.5.13 Review the acceptability of the moisture content of wood products.
- 2.5.14 Review that components and materials used are those specified in the construction documents.
- 2.5.15 Complete, sign and seal Model Schedule C-D (attached) and submit to the architect of record.

3. ADDITIONAL “ENHANCED BUILDING ENVELOPE SERVICES”

In addition to the *Basic Enhanced Building Envelope Services* (under section 2), the *BEP* may be required to provide the following *Additional Enhanced Building Envelope Services* if they become necessary during the course of the project. They are generally not considered part of the *BEP*'s basic services, as described in the preceding sections, and may require a review of the service agreement between the *BEP* and their client.

3.1 EXAMPLES OF ADDITIONAL ENHANCED BUILDING ENVELOPE SERVICES

- 3.1.1 Work resulting from changes to the project as originally described and agreed to under the contract between the *BEP* and client, such as changes in scope, schedule, cost, complexity, diversity or magnitude of the project.
- 3.1.2 Review of alternate designs and related documentation after selection of the Building Envelope designs are made during the conceptual design and design development phases.

- 3.1.3 Review of alternate or substitute assemblies if requested by the *BEP's* client for bidding, to obtain competitive bids for such items such as propriety products.
- 3.1.4 Work connected with the review of documents for bidding separate or managed contracts, pre-bid contracts, phased or fast-tracked construction.
- 3.1.5 Assistance in preparing or reviewing construction cost estimates.
- 3.1.6 Review of alternate designs or products after completion of the contract documents.
- 3.1.7 Special physical model analysis such as wind-tunnel.
- 3.1.8 Full-time field reviews of construction.
- 3.1.9 Review of additional submittals when occasioned by improper or incomplete submittals.
- 3.1.10 Work resulting from corrections or revisions required because of errors or omissions by others.
- 3.1.11 Work resulting from damage during construction as the result of fires, man-made disasters, or natural disasters.
- 3.1.12 Other sections of Part 5 of Division B of the British Columbia Building Code such as noted under Clause 2.3.5 above.

(II) JOINT BUILDING ENVELOPE PRACTICE: POINTS OF PRINCIPLE
(further to AIBC Council's endorsements of March 5 and June 1, 2001)

The following are "Points of Principle", subject to the AIBC/APEGBC "Memorandum of Agreement", as standards of practice (*to which architects and professional engineers are expected to adhere*):

A. NEW CONSTRUCTION (or building renovation projects not primarily building envelope rehabilitation)

- 1. The project's architect shall have overall responsibility for the design and field review of the building envelope, reflecting the wide range of issues that must be considered in addition to the requirements of Part 5 of Division B of the British Columbia Building Code.
- 2. The project's architect will prepare an integrated set of construction documents for the building envelope.
- 3. The project's architect must sign (and seal) the British Columbia Building Code's endorsed Schedules B-1, B-2 and C-B for building envelope components.
- 4. Where a "*Building Envelope Professional*" (*BEP*) is required by the authority having jurisdiction with respect to Sections 5.4, 5.5 and 5.6 of Part 5 of Division B British Columbia Building Code aspects of the building envelope, the *BEP* must sign (and seal) letters consistent with Model Schedules D and C-D for those aspects of the building envelope, and provide them to the architect and the *CRP*.
- 5. The *BEP* may be either an architect (who could also be the project's architect) or a professional engineer and shall provide support to the architect of record through design review and enhanced field reviews for Sections 5.4, 5.5 and 5.6 of Part 5 of Division B British Columbia Building Code aspects of the building envelope as described in the *Enhanced Building Envelope Services – Guidelines for Professional Practice* (see Section I of this Bulletin).
- 6. **By corollary, no British Columbia Building Code Schedule Bs are to be signed by the *BEP* unless that person is also the architect of record.**

B. BUILDING ENVELOPE REHABILITATION CONSTRUCTION (distinct from building renovation projects)

1. An architect, or professional engineer as permitted under the “Memorandum of Agreement between AIBC and APEGBC”, shall undertake a preliminary review of the rehabilitation program for all building envelope rehabilitation projects prior to building permit application, for the purpose of identifying issues beyond the scope of Sections 5.4, 5.5 and 5.6 of Part 5 of Division B British Columbia Building Code and the need for further work by any architects or professional engineers.
2. The registered professional who is taking overall responsibility for the design and field review of the building envelope (referred to hereunder as the “prime building envelope registered professional”) will prepare an integrated set of construction documents for a building envelope rehabilitation project.
3. The “prime building envelope registered professional” may be either an architect or a *BEP*. The “prime building envelope registered professional” must sign (and seal) the Building Code’s endorsed Schedules B-1, B-2 and C-B for building envelope components.
4. Where a *BEP* is required by the authority having jurisdiction with respect to Sections 5.4, 5.5 and 5.6 of Part 5 of Division B British Columbia Building Code aspects of the building envelope, the *BEP* must sign (and seal) letters consistent with Model Schedules D and C-D for the Part 5 aspects of the building envelope, and provide them to the authority.
5. The *BEP* may be either an architect or a professional engineer. The *BEP* will provide support to the “prime building envelope registered professional” through design review and enhanced field reviews for Part 5 aspects of the building envelope as described in the *Enhanced Building Envelope Professional Services – Guidelines for Professional Practice* (see Section I of this Bulletin).
6. One individual (architect or professional engineer) could be both the “prime building envelope registered professional” and the *BEP*.

III. Model Schedules for EBES

Model Schedules D and C-D, samples of which are attached, are not “letters of assurance” under the British Columbia Building Code. They are model “supporting” or “supplementary” letters for a *BEP*’s “enhanced building envelope services”. They may be copied or transcribed onto the *BEP*’s letterhead for use. Their use by *BEPs* is strongly recommended whenever “enhanced building envelope services” are being provided.

Similar letters prescribed for use by authorities having jurisdiction need to be checked by *BEPs* for consistency with the model Schedules D and C-D. Architects and professional engineers are encouraged to have such letters and their associated local bylaws or regulations reviewed by the AIBC or the APEGBC as well as their professional liability insurers.

The AIBC does not provide legal, accounting or insurance advice and expressly disclaims any responsibility for any errors or omissions with respect to legal, accounting or insurance matters that may be contained herein. Readers of AIBC documents are advised to consult their own legal, accounting or insurance representatives to obtain suitable professional advice in those regards.

MODEL SCHEDULE D

Building Permit No. ¹ _____

COMMITMENT FOR BUILDING ENVELOPE PROFESSIONAL REVIEW

- Notes:
1. This letter to be submitted prior to issuance of a *building permit*.
 2. This letter is endorsed by the Architectural Institute of British Columbia and the Association of Professional Engineers and Geoscientists of BC.
 3. In this letter the words in italics have the same meaning as in the British Columbia Building Code.

To:

Name of *registered professional* signing for 'Architectural' items of Schedule B-1 and B-2 letters (Print)

Address (Print)

RE:

Address of Project (Print)

The undersigned Building Envelope Professional as defined herein has been retained with respect to the above referenced *project*, and gives a commitment of responsibility for Building Envelope Professional design review and enhanced *field review* for components and assemblies outlined as acceptable solutions in Sections 5.4, 5.5 and 5.6 in Part 5 of Division B, of the British Columbia Building Code, and as the Building Envelope Professional in their professional discretion considers to be necessary, for the *project* designed by,

Name of *registered professional* signing for 'Architectural' items of Schedule B-1 and B-2 letters (Print)

who is providing the *Chief Building Official* with Schedule B-1 'ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW' and Schedule B-2 'SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS' letters covering 'Architectural' items. The undersigned will sign and provide copies of all reports to the *registered professional* responsible for 'Architectural' items, and the *Coordinating Registered Professional*. The undersigned undertakes to notify the *Coordinating Registered Professional* in writing as soon as practical if their contract is terminated at any time.

Building Envelope Professional Name (Print)

Address (Print)

City

Postal Code

Telephone (____) _____

(If the Building Envelope Professional is a member of a firm, complete the following.)

I am a member of the firm; _____
(Print Name of Firm)

and I sign this letter on behalf of the firm.

(Professional's Seal and Signature)

Date

Notes: The above letter must be signed by a "Building Envelope Professional" defined herein as an architect (member of the Architectural Institute of BC) or a professional engineer (member of the Association of Professional Engineers and Geoscientists of BC), who is competent by virtue of education and experience to provide Enhanced Building Envelope Services and whose practice is focused accordingly. Enhanced *field review* is defined as *field review* supplementary to that undertaken by the *registered professional* who signed for the "Architectural" components of the Schedules B1 & B2. Enhanced *field review* requires that the "Building Envelope Professional" perform reviews of sufficient frequency and extent at the discretion of the "Building Envelope Professional" in order to ascertain whether the work substantially complies with the architectural plans and supporting documents for components and assemblies outlined as acceptable solutions in Sections 5.4, 5.5 and 5.6 in Part 5 of Division B of the British Columbia Building Code.

¹ For Building Official's use only

MODEL SCHEDULE C-D

Building Permit No. ¹

COMPLETION OF BUILDING ENVELOPE PROFESSIONAL REVIEW

- Notes:
1. This letter to be submitted after completion of the project but prior to official *occupancy*.
 2. This letter is endorsed by the Architectural Institute of British Columbia and the Association of Professional Engineers and Geoscientists of BC.
 3. In this letter the words in italics have the same meaning as in the British Columbia Building Code.

To:

Name of *registered professional* signing for 'Architectural' items of Schedule B-1 and B-2 letters (Print)

Address (Print)

RE:

Address of Project (Print)

I have fulfilled my obligations for Building Envelope Professional design review and enhanced *field review* as per my previously submitted letter of COMMITMENT FOR BUILDING ENVELOPE PROFESSIONAL REVIEW. The components and assemblies of the *project* reviewed substantially comply with those outlined as acceptable solutions in Sections 5.4, 5.5 and 5.6. In Part 5 of Division B, of the British Columbia Building Code, and with the plans and supporting documents, including all amendments thereto, which were *accepted* in support of the application for the *building permit*.

Building Envelope Professional Name (Print)

Address (Print)

City

Postal Code

Telephone (____) _____

(Professional's Seal and Signature)

Date

(If the Building Envelope Professional is a member of a firm, complete the following.)

I am a member of the firm; _____ and I sign this letter on behalf of the firm.
(Print Name of Firm)

Notes: The above letter must be signed by a "Building Envelope Professional" defined herein as an architect (member of the Architectural Institute of BC) or a professional engineer (member of the Association of Professional Engineers and Geoscientists of BC), who is competent by virtue of education and experience to provide Enhanced Building Envelope Services and whose practice is focused accordingly. Enhanced *field review* is defined as *field review* supplementary to that undertaken by the *registered professional* who signed for the "Architectural" components of the Schedules B1 & B2. Enhanced *field review* requires that the "Building Envelope Professional" perform reviews of sufficient frequency and extent at the discretion of the "Building Envelope Professional" in order to ascertain whether the work substantially complies with the architectural plans and supporting documents for components and assemblies outlined as acceptable solutions in Sections 5.4, 5.5 and 5.6 in Part 5 of Division B of the British Columbia Building Code.

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