

Section 2.3. Alternative Solutions

2.3.1. Alternative Solutions

(See Note A-2.3.1.)

2.3.1.1. Application

1) For the purposes of Clause 1.2.1.1.(1)(b) of Division A, on written request by the owner of a building or an authorized agent of that owner, the *Chief Building Official* shall accept a measure as an alternate solution to an acceptable solution for the building if satisfied that

- a) the measure will achieve at least the level of performance required by Clause 1.2.1.1.(1)(b) of Division A, and
- b) the acceptable solution does not expressly require conformance to a provincial enactment other than the Building By-law.

2.3.1.2. Documentation

1) The *Chief Building Official* may require a person requesting the use of an alternative solution to provide documentation to demonstrate that the proposed alternative solution will achieve at least the level of performance required by Clause 1.2.1.1.(1)(b) of Division A.

2) The documentation referred to in Sentence (1) shall include

- a) a Code analysis outlining the analytical methods and rationales used to determine that a proposed alternative solution will achieve at least the level of performance required by Clause 1.2.1.1.(1)(b) of Division A, and
- b) information concerning any special maintenance or operational requirements, including any *building* component commissioning requirements, that are necessary for the alternative solution to achieve compliance with the By-law after the *building* is constructed.

3) The Code analysis referred to in Clause (2)(a) shall identify the applicable objectives, functional statements and acceptable solutions, and any assumptions, limiting or restricting factors, testing procedures, engineering studies or performance parameters that will support a Code compliance assessment.

4) The Code analysis referred to in Clause (2)(a) shall include information about the qualifications, experience and background of the person or persons taking responsibility for the design.

5) The information provided under Sentence (3) shall be in sufficient detail to convey the design intent and to support the validity, accuracy, relevance and precision of the Code analysis.

6) Where more than one person is responsible for the design of a *building* or facility that includes a proposed alternative solution, the person requesting the use of the alternative solution shall identify a single person to co-ordinate the preparation of the design, Code analysis and documentation referred to in this Article.

2.3.1.3. Alternative Solution Expiry

1) The *Chief Building Official* may rescind a request or application made pursuant to the requirements of this Subsection if in the opinion of the *Chief Building Official*

- a) there has been no substantial progress or activity by the owner of a *building* or an authorized agent of that owner to demonstrate that the level of performance specified by Clause 1.2.1.1.(1)(b) of Division A will be achieved,
- b) the work to install measures describe in the alternative solution although commenced is not continuously and actively carried out thereafter, or
- c) the work to install measures describe in the alternative solution has been substantially discontinued for a period of 6 months.

2.3.2. Additional Requirements for Fire and Life Safety Alternative Solutions

2.3.2.1. Design Criteria

- 1) Alternative solutions, as described in Article 2.3.1.2., shall be based upon an *acceptable* report sealed by an *acceptable registered professional* and provided to the *Chief Building Official*, which shall include
 - a) a thorough description of the *building*,
 - b) an analysis of the *building* that identifies all deviations from the requirements of this By-law,
 - c) the life safety principles considered in developing the proposed alternative solutions and their rationale, based upon NRC fire research reports and other approved agencies where applicable,
 - d) a proposal for alternative solutions,
 - e) an evaluation of the proposed alternative solutions based upon generally recognized studies,
 - f) evidence of reliable performance of the proposed alternative solutions,
 - g) a method of monitoring the design of the proposed alternative solutions, and
 - h) a commitment to perform field review of the proposed alternative solutions.
- 2) The report described in Sentence (1) shall be sufficiently detailed to permit evaluation of the proposed alternative solutions.
- 3) Upon acceptance of a proposed alternative solution by the *Chief Building Official*, the *registered professional* who has placed their seal on the report shall
 - a) submit a letter to the *Chief Building Official*, assuring that the alternative solution, as installed, will perform as represented in the report, and
 - b) at the request of the *Chief Building Official*, submit an acceptable field commissioning and testing report.

2.3.3. Alternative Solution Review Panel

2.3.3.1. Request for Review by Alternative Solution Review Panel

- 1) An applicant may apply to the *Chief Building Official* to request the appointment of an alternative review panel to review an alternative solution application.
- 2) An applicant who requests the appointment of an alternative review panel must pay the fees set out in the Fee Schedule.
- 3) At the request of the applicant, the *Chief Building Official* may appoint an alternative solution review panel of up to three experts to review the alternative solution application, to hear from the applicant and *City* staff and to advise the applicant and the *Chief Building Official* regarding the proposed solution.
- 4) A decision of an alternative solution review panel is not binding on the *Chief Building Official*.

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE A

Building Permit No. _____
(for Building Official's use)

Forming Part of Sentence 2.2.7.2.(1), Division C of the Building By-law

CONFIRMATION OF COMMITMENT BY OWNER AND COORDINATING REGISTERED PROFESSIONAL

Notes:

- i) This letter must be submitted before issuance of a *building permit*.
- ii) This letter is endorsed by: Architectural Institute of B.C. and the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
- iii) In this letter the words in italics have the same meaning as in the Building By-law.

Re: Design and *Field Review of Construction*

Professional's Seal and Signature

To: The *Chief Building Official*

Re: _____
Name of Project (Print)

Address of Project (Print)

Certified Professional's Stamp and Signature
(if applicable)

The undersigned has retained _____ as a *coordinating registered professional* to coordinate the design work and *field reviews* of the *registered professionals of record* required¹ for this *project*. The *coordinating registered professional* shall coordinate the design work and *field reviews* of the *registered professionals of record* required for the *project* in order to ascertain that the design will substantially comply with the Building By-law and other applicable enactments respecting safety and that the *construction* of the project will substantially comply with the Building By-law and other applicable enactments respecting safety, not including the *construction safety* aspects.

"*field reviews*" are defined in the Building By-law to mean those reviews of the work

- (a) at a project site of a development to which a *building permit* relates, and
- (b) where applicable, at fabrication locations where *building* components are fabricated for use at the *project* site

that a *registered professional* in his or her professional discretion considers necessary to ascertain whether the work substantially complies in all material respects with the plans and supporting documents prepared by the *registered professional of record* for which the *building permit* is issued.

The *owner* and the *coordinating registered professional* have read Subsection 2.2.7., Division C of the Building By-law. The *owner* and the *coordinating registered professional* each acknowledge their responsibility to notify the *Chief Building Official* of the date the *coordinating registered professional* ceases to be retained by the *owner* before the date the *coordinating registered professional* ceases to be retained or, if that is not possible, then as soon as possible. The *coordinating registered professional* acknowledges the responsibility to notify the *Chief Building Official* of the date a *registered professional of record* ceases to be retained before the date the *registered professional of record* ceases to be retained or, if that is not possible, then as soon as possible.

¹ It is the responsibility of the *coordinating registered professional* to ascertain which *registered professionals* are required, and to initial each Schedule B prior to submission to the *Chief Building Official*.

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE A - continued

Building Permit No. _____
(for Building Official's use)

Project Address _____

The *owner* and the *coordinating registered professional* understand that where the *coordinating registered professional* or a *registered professional of record* ceases to be retained at any time during *construction*, work on the above *project* will cease until such time as

- (a) a new *coordinating registered professional* or *registered professional of record*, as the case may be, is retained, and
- (b) a new letter in the form set out in Schedule A or in the forms set out in Schedules B, as the case may be, is filed with the *Chief Building Official*.

The undersigned *coordinating registered professional* certifies that he or she is a *registered professional* as defined in the Building By-law, and agrees to coordinate the design work and *field reviews* of the *registered professionals of record* required for the *project* as outlined in the attached Schedules B including coordination and integration of functional testing of fire protection and life safety systems. (See A-2.2.7.3. in Appendix A.)

Coordinating Registered Professional

Owner

Coordinating Registered Professional's Name (Print)

Owner's Name (Print)

Address (Print)

Address (Print)

Phone No. and Email address

Name of Agent or Signing Officer if applicable (Print)

Date

Professional's Seal and
Signature

Owner's or Owner's appointed agent's Signature.
(If *owner* is a corporation the signature of a signing officer must be given here. If the signature is that of the agent, a copy of the document that appoints the agent must be attached.)

Certified Professional's
Stamp and Signature
(if applicable)

(If the *Coordinating Registered 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.

This letter must be signed by the *owner* or the *owner's* appointed agent and by the *coordinating registered professional*. An agent's letter of appointment must be attached. If the *owner* is a corporation, the letter must be signed by a signing officer of the corporation and the signing officer must set forth his or her position in the corporation.

The Building By-law defines a *registered professional* to mean

- (a) a person who is registered or licensed to practise as an architect under the Architects Act, or
- (b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE B

Building Permit No. _____
(for Building Official's use)

Forming Part of Subsection 2.2.7., Division C of the Building By-law

ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW

Notes:

- i) This letter must be submitted prior to the commencement of *construction* activities of the components identified below. A separate letter must be submitted by each *registered professional of record*.
- ii) This letter is endorsed by: Architectural Institute of B.C. and the Association of Professional Engineers and Geoscientists of the Province of British Columbia.

To: The *Chief Building Official*

Re: _____
Name of Project (Print)

Address of Project (Print)

Professional's Seal and Signature

The undersigned hereby gives assurance that the design of the
(Initial those of the items listed below that apply to this *registered professional of record*. All the disciplines will not necessarily be employed on every *project*.)

- _____ **ARCHITECTURAL**
- _____ **STRUCTURAL**
- _____ **MECHANICAL**
- _____ **PLUMBING**
- _____ **FIRE SUPPRESSION SYSTEMS**
- _____ **ELECTRICAL**
- _____ **GEOTECHNICAL — temporary**
- _____ **GEOTECHNICAL — permanent**

Certified Professional's Stamp and Signature (if applicable)

Components of the plans and supporting documents prepared by this *registered professional* in support of the application for the *building permit* as outlined below substantially comply with the Building By-law and other applicable enactments respecting safety except for *construction* safety aspects.

The undersigned hereby undertakes to be responsible for *field reviews* of the above referenced components during *construction* as indicated on the "SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS" below.

CRP's Initials

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE B - continued

Building Permit No. _____
(for Building Official's use)

_____ Project Address

_____ Discipline

The undersigned also undertakes to notify the *Chief Building Official* in writing as soon as possible if the undersigned's contract for *field review* is terminated at any time during *construction*.

I certify that I am a *registered professional* as defined in the Building By-law.

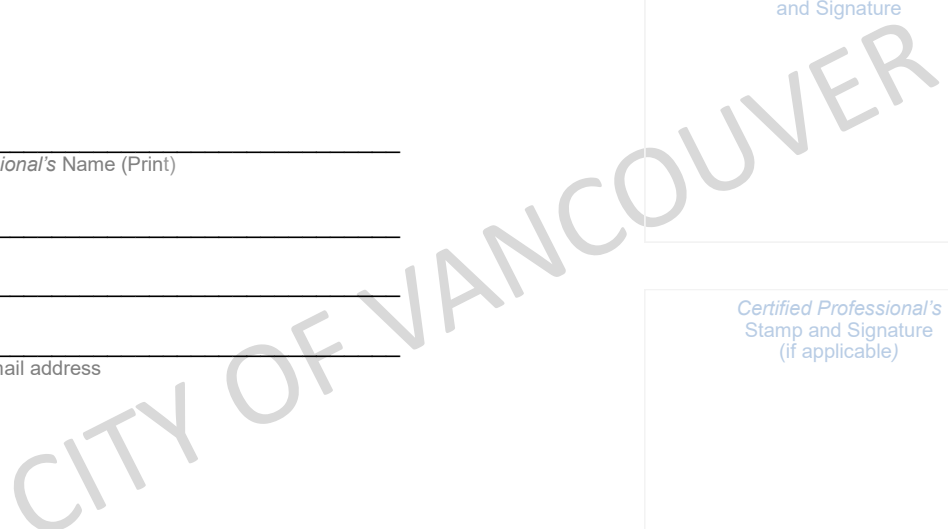
Professional's Seal and Signature

Certified Professional's Stamp and Signature (if applicable)

Registered Professional's Name (Print)

Address (Print)

Phone No. and Email address



(If the *Registered Professional of Record* 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.

Note: The above letter must be signed by *registered professional of record*, who is a *registered professional*.

The Building By-law defines a *registered professional* to mean

- (a) a person who is registered or licensed to practise as an architect under the Architects Act, or
- (b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.

CRP's Initials

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE B - continued

Building Permit No. _____
(for Building Official's use)

_____ Project Address

_____ Discipline

SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS

(Initial applicable discipline below and cross out and initial only those items not applicable to the *project*.)

ARCHITECTURAL

- 1.1 Fire resisting assemblies
- 1.2 *Fire separations* and their continuity
- 1.3 *Closures*, including tightness and operation
- 1.4 Egress systems, including *access to exit* within *suites* and *floor areas*
- 1.5 Performance and physical safety features (guardrails, handrails, etc.)
- 1.6 Structural capacity of architectural components, including anchorage and seismic restraint
- 1.7 Sound control
- 1.8 Landscaping, screening and site grading
- 1.9 Provisions for firefighting access
- 1.10 Access requirements for *persons with disabilities*
- 1.11 Elevating devices
- 1.12 Functional testing of architecturally related fire emergency systems and devices
- 1.13 Development Permit and conditions therein
- 1.14 Interior signage, including acceptable materials, dimensions and locations
- 1.15 Review of all applicable shop drawings
- 1.16 Interior and exterior finishes
- 1.17 Dampproofing and/or waterproofing of walls and slabs below *grade*
- 1.18 Roofing and flashings
- 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 requirements (Part 5)
- 1.24 Building envelope, Part 10 requirements (ASHRAE, NECB, ZEBP, etc)

Professional's Seal
and Signature

STRUCTURAL

- 2.1 Structural capacity of structural components of the *building*, including anchorage and seismic restraint
- 2.2 Structural aspects of *deep foundations*
- 2.3 Review of all applicable shop drawings
- 2.4 Structural aspects of unbonded post-tensioned concrete design and *construction*

Certified Professional's
Stamp and Signature
(if applicable)

MECHANICAL

- 3.1 HVAC systems and devices, including high *building* requirements where applicable
- 3.2 *Fire dampers* at required *fire separations*
- 3.3 Continuity of *fire separations* at HVAC penetrations
- 3.4 Functional testing of mechanically related fire emergency systems and devices
- 3.5 Maintenance manuals for mechanical systems
- 3.6 Structural capacity of mechanical components, including anchorage and seismic restraint
- 3.7 Review of all applicable shop drawings
- 3.8 Mechanical systems, Part 10 requirements (ASHRAE, NECB, ZEBP, etc)

_____ CRP's Initial

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE B - continued

Building Permit No. _____
(for Building Official's use)

Project Address _____

Discipline _____

PLUMBING

- 4.1 Roof *drainage systems*
- 4.2 Site and *foundation drainage systems*
- 4.3 *Plumbing systems* and devices
- 4.4 Continuity of *fire separations* at plumbing penetrations
- 4.5 Functional testing of plumbing related fire emergency systems and devices
- 4.6 Maintenance manuals for *plumbing systems*
- 4.7 Structural capacity of plumbing components, including anchorage and seismic restraint
- 4.8 Review of all applicable shop drawings
- 4.9 *Plumbing systems*, Part 10 requirements (ASHRAE, NECB, ZEBP, etc)
- 4.10 *Plumbing systems*, testing, confirmation

FIRE SUPPRESSION SYSTEMS

- 5.1 Suppression system classification for type of *occupancy*
- 5.2 Design coverage, including concealed or special areas
- 5.3 Compatibility and location of electrical supervision, ancillary alarm and control devices
- 5.4 Evaluation of the capacity of city (municipal) water supply versus system demands and domestic demand, including pumping devices where necessary
- 5.5 Qualification of welder, quality of welds and material
- 5.6 Review of all applicable shop drawings
- 5.7 Acceptance testing for "Contractor's Material and Test Certificate" as per NFPA Standards
- 5.8 Maintenance program and manual for suppression systems
- 5.9 Structural capacity of sprinkler components, including anchorage and seismic restraint
- 5.10 For partial systems — confirm sprinklers are installed in all areas where required
- 5.11 Fire Department connections and hydrant locations
- 5.12 Fire hose standpipes
- 5.13 Freeze protection measures for fire suppression systems
- 5.14 Functional testing of fire suppression systems and devices

ELECTRICAL

- 6.1 Electrical systems and devices, including high *building* requirements where applicable
- 6.2 Continuity of *fire separations* at electrical penetrations
- 6.3 Functional testing of electrical related fire emergency systems and devices
- 6.4 Electrical systems and devices maintenance manuals
- 6.5 Structural capacity of electrical components, including anchorage and seismic restraint
- 6.6 Clearances from *buildings* of all electrical utility equipment
- 6.7 Fire protection of *wiring* for emergency systems
- 6.8 Review of all applicable shop drawings
- 6.9 Electrical systems, Part 10 requirements (ASHRAE, NECB, ZEBP, etc)
- 6.10 Electrical systems, testing, confirmation
- 6.11 Radio Antenna Systems

GEOTECHNICAL — Temporary

- 7.1 *Excavation*
- 7.2 Shoring
- 7.3 Underpinning
- 7.4 Temporary *construction* dewatering

GEOTECHNICAL — Permanent

- 8.1 Bearing capacity of the soil
- 8.2 Geotechnical aspects of *deep foundations*
- 8.3 Compaction of engineered fill
- 8.4 Structural considerations of soil, including slope stability and seismic loading
- 8.5 Backfill
- 8.6 Permanent dewatering
- 8.7 Permanent underpinning

Professional's Seal and Signature

Certified Professional's Stamp and Signature (if applicable)

CRP's Initial

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE C-A

Building Permit No. _____
(for Building Official's use)

Forming Part of Sentence 2.2.7., Division C of the
Building By-law

**ASSURANCE OF COORDINATION OF
PROFESSIONAL FIELD REVIEW**

Notes:

- i) This letter must be submitted after completion of the *project* but before the *occupancy permit* is issued or a final inspection is made, by the *Chief Building Official*.
- ii) This letter is endorsed by: Architectural Institute of B.C. and the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
- iii) In this letter the words in italics have the same meaning as in the Building By-law.

To: The *Chief Building Official*

Re: _____
Name of Project (Print)

Address of Project (Print)

Professional's Seal and
Signature

(The *coordinating registered professional* shall complete the following:)

Name (Print)

Address (Print)

Phone No. and Email address (Print)

Certified Professional's Stamp
and Signature
(if applicable)

I hereby give assurance that

- a) I have fulfilled my obligations for coordination of *field reviews* of the *registered professionals of record* required for the *project* as outlined in Subsection 2.2.7., Division C of the Building By-law and in the previously submitted Schedule A, "CONFIRMATION OF COMMITMENT BY OWNER AND BY COORDINATING REGISTERED PROFESSIONAL,"
- b) I have coordinated the functional testing of the fire protection and life safety systems to ascertain that they substantially comply in all material respects with
 - i) the applicable requirements of the Building By-law and other applicable enactments respecting safety, not including *construction safety* aspects, and
 - ii) the plans and supporting documents submitted in support of the application for the *building permit*,
- c) I am a *registered professional* as defined in the Building By-law.

(If the *coordinating registered 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)

Note: The above letter must be signed by a *coordinating registered professional*, who is also a *registered professional*. The Building By-law defines a *registered professional* to mean

- a) a person who is registered or licensed to practise as an architect under the Architects Act, or
- b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.

BUILDING BY-LAW 2019 – CITY OF VANCOUVER

SCHEDULE C-B

Building Permit No. _____
(for Building Official's use)

Forming Part of Subsection 2.2.7., Division C of the
Building By-law

ASSURANCE OF PROFESSIONAL FIELD REVIEW

Notes:

- i) This letter must be submitted after completion of the project but prior to final inspection by the *Chief Building Official*. A separate letter must be submitted by each *registered professional of record*.
- ii) This letter is endorsed by: Architectural Institute of B.C. and the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
- iii) In this letter the words in italics have the same meaning as in the Building By-law.

To: The *Chief Building Official*

Name of Jurisdiction (Print)

Re: _____
Name of Project (Print)

Address of Project (Print)

(Each *registered professional* shall complete the following:)

Name (Print)

Address (Print)

Phone No. and Email address (Print)

Professional's Seal and
Signature

Certified Professional's Stamp
and Signature
(if applicable)

I hereby give assurance that

- a) I have fulfilled my obligations for coordination of *field reviews* as outlined in Subsection 2.2.7.2., Division C of the Building By-law and in the previously submitted Schedule B, "ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW", and
- b) Those components of project opposite my initials in Schedule B substantially comply in all materials respects with
 - i) the applicable requirements of the Building By-law and other applicable enactments respecting safety, not including *construction* safety aspects, and
 - ii) the plans and supporting documents submitted in support of the application for the *building permit*,
- c) I am a *registered professional of record* as defined in the Building By-law.

(If the registered professional of record 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)

Note: The above letter must be signed by a *registered professional of record*, who is a *registered professional*. The Building By-law defines a *registered professional* to mean

- a) a person who is registered or licensed to practise as an architect under the Architects Act, or
- b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.