

PROVINCE OF BRITISH COLUMBIA

REGULATION OF THE MINISTER OF NATURAL GAS DEVELOPMENT AND
MINISTER RESPONSIBLE FOR HOUSING AND DEPUTY PREMIER


Building Act

Ministerial Order No. M 158

I, Rich Coleman, Minister of Natural Gas Development and Minister Responsible for Housing and Deputy Premier, order that the British Columbia Building Code Regulation, B.C. Reg. 264/2012, is amended as set out in the attached Schedule.

APR 06 2017

Date



Minister of Natural Gas Development and
Minister Responsible for Housing and
Deputy Premier

(This part is for administrative purposes only and is not part of the Order.)

Authority under which Order is made:

Act and section: Building Act, S.B.C. 2015, c. 2, s. 3

Other: M188/2012

March 24, 2017

SCHEDULE

1 *Book I (General) of the British Columbia Building Code established by the British Columbia Building Code Regulation, B.C. Reg. 264/2012, is amended as set out in this Schedule.*

Division 1 – Changes to Division A

2 *Sentence 1.4.2.1.(1) of Division A is amended by adding the following abbreviation:*

kWh kilowatt hour(s) .

Division 2 – Changes to Division B

3 *Table 1.3.1.2. of Division B is amended*

(a) by adding the following item:

ASTM	E 779-10	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization	9.36.6.5.(1) 10.2.3.5.(1)
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(b) by repealing the following item:

CCBFC	NRCC 54435-2011	National Energy Code of Canada for Buildings	10.2.1.1.(1) 9.36.1.3.(1) 9.36.1.3.(4) 9.36.3.1.(2) 9.36.4.1.(2)
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and substituting the following:

CCBFC	NRCC 54435-2011	National Energy Code of Canada for Buildings	9.36.1.3.(1) 9.36.1.3.(4) 9.36.3.1.(2) 9.36.4.1.(2) 10.2.2.1.(1) 10.2.3.4.(1)
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,

(c) by repealing the following item:

CGSB	CAN/CGSB 149.10-M86	Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method	9.36.5.10.(11)
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and substituting the following:

CAN/CGSB	CAN/CGSB 149.10-M86	Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method	9.36.5.10.(11) 9.36.6.5.(1)
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, and

(d) by adding the following items:

CoV	2017	City of Vancouver Energy Modelling Guidelines	10.2.3.4.(1)
USACE	Version 3-2012	Air Leakage Test Protocol for Building Envelopes	9.36.6.5.(1) 10.2.3.5.(1)

4 Sentence 1.3.2.1.(1) is amended by adding the following abbreviations:

CoV..... City of Vancouver (453 West 12th Ave., Vancouver, BC V5Y 1V4, www.vancouver.ca)

USACE..... United States Army Corps of Engineers (U.S. Army Engineer Research and Development Center, 2902 Newmark Drive, Champaign, IL 61826-9005, USA, www.erd.usace.army.mil/Locations/CERL).

5 Article 6.2.2.1. is amended by adding the following Sentence:

4) For *suites* in *buildings* conforming to Subsection 9.36.6. or 10.2.3., the outdoor air required by Sentence (2) shall be supplied directly to each *suite* by mechanical ventilation through ducting.

(See Appendix A.)

6 Sentence 6.2.2.2.(1) is amended by adding “and except as required by Sentence 6.2.2.1.(4)” after “Except as permitted by Sentence (2)”.

7 Clause 9.32.3.4.(6)(a) is amended by striking out “and” at the end of Subclause (ii) and by adding the following Subclause:

iv) is not located in a *building* conforming to Subsection 9.36.6. or 10.2.3., and .

8 Article 9.36.1.3. is amended

(a) in Sentence (1) by striking out “or” at the end of Clause (b), by adding “or” at the end of Clause (c) and by adding the following Clause:

d) Subsection 9.36.6. , **and**

(b) in Sentence (3) by striking out “Subsection 9.36.5. applies” and substituting “Subsections 9.36.5. and 9.36.6. apply”.

9 Sentence 9.36.5.4.(10) is amended by striking out “Sentence 9.36.5.10.(10) or (11), as applicable.” and substituting “Article 9.36.5.10.”.

10 Article 9.36.5.10. is amended

(a) in Clause (9)(a) by striking out “3.2 air changes” and substituting “4.5 air changes”,

(b) in Clause (9)(b) by striking out “2.5 air changes” and substituting “3.5 air changes”,

(c) in Clause (9)(c) by striking out “where airtightness is tested in accordance with Sentence (11),” and substituting “tested in accordance with Sentence (11), and shall be”,

(d) *in Sentence (10) by striking out “A design airtightness shall be” and substituting “Where airtightness is measured in accordance with Clause 9.36.5.10.(9) (c), the applicable airtightness value in Clause 9.36.5.10.(9)(a) or (b) shall be”, and*

(e) *by repealing Sentence (12).*

11 The following Subsection is added:

9.36.6. ENERGY STEP CODE

9.36.6.1. Application

1) Where a *building* contains more than one *dwelling unit*, the requirements of this Subsection shall apply to the energy performance of the *building* and not to individual *dwelling units*.

9.36.6.2. Definitions

1) For the purpose of this Subsection, the term “mechanical energy use intensity” shall mean a metric of the energy used over a year, estimated by using an energy model in accordance with Article 9.36.6.4., normalized per square metre of area of *conditioned space* and expressed in kWh/(m²-year), for all of the following combined:

- a) space-heating equipment,
- b) space-cooling equipment,
- c) fans,
- d) service water heating equipment,
- e) pumps, and
- f) auxiliary HVAC equipment (see Appendix A).

2) For the purpose of this Subsection, the term “EnerGuide Rating % lower than EnerGuide Reference House” shall mean the metric that results when, using HOT2000 software, version 11 or newer and Natural Resources Canada’s EnerGuide Rating System, version 15 or newer, the energy consumption of the following are compared:

- a) the proposed *building*, not including the EnerGuide assumed electric base loads, and
- b) the corresponding automatically-generated reference house, not including the EnerGuide assumed electric base loads.

3) For the purpose of this Subsection, the term “thermal energy demand intensity” shall mean a metric of the annual heating required by the *building* for space conditioning and for conditioning of ventilation air, estimated by using an energy model in accordance with Article 9.36.6.4., normalized per square metre of area of *conditioned space* and expressed in kWh/(m²-year), taking into account all of the following:

- a) thermal transmittance of above-ground walls and roof-ceiling assemblies,

- b) thermal transmittance of floors and walls in contact with the ground, or with space that is not *conditioned space*,
- c) thermal transmittance and solar heat gain of windows, doors and skylights,
- d) air leakage through the air barrier system,
- e) internal heat gains from occupants and equipment, and
- f) heat recovery from exhaust ventilation.

4) For the purpose of this Subsection, the term “peak thermal load” shall mean a metric of the maximum heating energy required by the *building* for space conditioning and for conditioning of ventilation air, estimated by using an energy model in accordance with Article 9.36.6.4., at a 2.5% January design temperature and expressed in watts per square metre of area (W/m^2) of *conditioned space*, taking into account all of the items referred to in Clauses (3)(a) through (f).

5) For the purpose of this Subsection, the term “Step” shall mean a Step referred to in Tables 9.36.6.3.A. to C.

9.36.6.3. Compliance Requirements

1) *Buildings* conforming to the requirements of any of Steps 1 to 5 shall be designed and constructed to conform to the applicable energy performance requirements in Tables 9.36.6.3.A. to C.

Table 9.36.6.3.A.

Requirements for Buildings Located Where the Degree-Days Below 18°C Value is less than 3000⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of <i>Building</i> Equipment and Systems	Performance Requirement of <i>Building</i> Envelope
1	N/A	EnerGuide Rating % lower than EnerGuide Reference House: not less than 0% lower energy consumption or conform to Subsection 9.36.5.	
2	≤ 3.0	EnerGuide Rating % lower than EnerGuide Reference House: not less than 10% lower energy consumption or mechanical energy use intensity ≤ 60 kWh/m ² ·year	thermal energy demand intensity ≤ 45 kWh/(m ² ·year) or peak thermal load ≤ 35 W/m ²
3	≤ 2.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 20% lower energy consumption or mechanical energy use intensity ≤ 45 kWh/m ² ·year	thermal energy demand intensity ≤ 40 kWh/(m ² ·year) or peak thermal load ≤ 30 W/m ²
4	≤ 1.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 40% lower energy consumption	thermal energy demand intensity ≤ 25 kWh/(m ² ·year) or peak thermal load

		or mechanical energy use intensity ≤ 35 kWh/m ² ·year	≤ 25 W/m ²
5	≤ 1.0	mechanical energy use intensity ≤ 25 kWh/m ² ·year	thermal energy demand intensity ≤ 15 kWh/(m ² ·year) or peak thermal load ≤ 10 W/m ²

Notes to Table 9.36.6.3.A.:

⁽¹⁾ See Sentence 1.1.3.1.(1) of this Division and Table C-2 in Appendix C.

Table 9.36.6.3.B.

Requirements for Buildings Located Where the Degree-Days Below 18°C Value is 3000 to 3999⁽¹⁾
Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of <i>Building</i> Equipment and Systems	Performance Requirement of <i>Building</i> Envelope
1	N/A	EnerGuide Rating % lower than EnerGuide Reference House: not less than 0% lower energy consumption or conform to Subsection 9.36.5.	
2	≤ 3.0	EnerGuide Rating % lower than EnerGuide Reference House: not less than 10% lower energy consumption or mechanical energy use intensity ≤ 90 kWh/(m ² ·year)	thermal energy demand intensity ≤ 60 kWh/(m ² ·year) or peak thermal load ≤ 55 W/m ²
3	≤ 2.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 20% lower energy consumption or mechanical energy use intensity ≤ 75 kWh/(m ² ·year)	thermal energy demand intensity ≤ 50 kWh/(m ² ·year) or peak thermal load ≤ 45 W/m ²
4	≤ 1.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 40% lower energy consumption or mechanical energy use intensity ≤ 45 kWh/(m ² ·year)	thermal energy demand intensity ≤ 40 kWh/(m ² ·year) or peak thermal load ≤ 40 W/m ²
5	≤ 1.0	mechanical energy use intensity ≤ 25 kWh/(m ² ·year)	thermal energy demand intensity ≤ 15 kWh/(m ² ·year) or peak thermal load ≤ 10 W/m ²

Notes to Table 9.36.6.3.B.:

⁽¹⁾ See Sentence 1.1.3.1.(1) of this Division and Table C-2 in Appendix C.

Table 9.36.6.3.C.
Requirements for Buildings Located Where the Degree-Days Below 18°C Value is greater than 3999⁽¹⁾
 Forming Part of Sentence 9.36.6.3.(1)

Step	Airtightness (Air Changes per Hour at 50 Pa Pressure Differential)	Performance Requirement of <i>Building</i> Equipment and Systems	Performance Requirement of <i>Building</i> Envelope
1	N/A	EnerGuide Rating % lower than EnerGuide Reference House: not less than 0% lower energy consumption or conform to Subsection 9.36.5.	
2	≤ 3.0	EnerGuide Rating % lower than EnerGuide Reference House: not less than 10% lower energy consumption or mechanical energy use intensity ≤ 100 kWh/(m ² ·year)	thermal energy demand intensity ≤ 70 kWh/(m ² ·year) or peak thermal load ≤ 55 W/m ²
3	≤ 2.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 20% lower energy consumption or mechanical energy use intensity ≤ 85 kWh/(m ² ·year)	thermal energy demand intensity ≤ 60 kWh/(m ² ·year) or peak thermal load ≤ 50 W/m ²
4	≤ 1.5	EnerGuide Rating % lower than EnerGuide Reference House: not less than 40% lower energy consumption or mechanical energy use intensity ≤ 55 kWh/(m ² ·year)	thermal energy demand intensity ≤ 50 kWh/(m ² ·year) or peak thermal load ≤ 45 W/m ²
5	≤ 1.0	mechanical energy use intensity ≤ 25 kWh/(m ² ·year)	thermal energy demand intensity ≤ 15 kWh/(m ² ·year) or peak thermal load ≤ 10 W/m ²

Notes to Table 9.36.6.3.C.:

⁽¹⁾ See Sentence 1.1.3.1.(1) of this Division and Table C-2 in Appendix C.

- 2) Except as permitted by Sentence (3),
 - a) energy performance shall be calculated in conformance with Article 9.36.6.4., and
 - b) airtightness shall be tested in accordance with Article 9.36.6.5.
- (See Appendix A.)

3) *Buildings* designed and constructed to conform to Step 5 of any of Tables 9.36.6.3.A. to C. and to the Passive House Planning Package, version 9 or newer, are deemed to comply with this Subsection if the energy model according to which the *building* is designed and constructed is prepared by a Certified Passive House Designer, or Certified Passive House Consultant, who is approved by the Passive House Institute.

9.36.6.4. Energy Modelling

- 1) Energy modelling shall be performed using a computer program that employs calculation methods that have been tested in accordance with ANSI/ASHRAE 140, "Evaluation of Building Energy Analysis Computer Programs" with variations in the computer program from the range recommended therein reported in accordance with Division C.
- 2) Energy modelling shall conform to
 - a) Subsection 9.36.5.,
 - b) the EnerGuide Rating System, version 15 or newer, or (See Appendix A.)
 - c) Clauses 10.2.3.4.(1)(a) and (b).
- 3) The Performance Requirement of Building Equipment and Systems and the Performance Requirement of Building Envelope required under Sentence 9.36.6.3.(1) shall both be modelled using the same
 - a) energy modelling methods, and
 - b) climatic data, *soil* conditions, operating schedules and temperature set-points.
- 4) For *buildings* conforming to the requirements of any of Steps 2 to 5, energy modelling shall account for the air leakage rate derived in accordance with Article 9.36.6.5.

(See Appendix A.)

9.36.6.5. Building Envelope Airtightness Testing

- 1) *Buildings* shall be tested for airtightness in accordance with
 - a) CAN/CGSB 149.10, "Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method",
 - b) ASTM E 779, "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization", or
 - c) USACE Version 3, "Air Leakage Test Protocol for Building Envelopes".
- 2) Where airtightness is determined in accordance with Sentence (1) with intentional openings for mechanical equipment left unsealed, the airtightness rate shall be adjusted in the energy model calculations to account for air leakage through mechanical equipment.
- 3) *Buildings* shall be tested for airtightness to an induced test pressure of not less than 50 Pa.

12 Section 10.2. is repealed and the following substituted:

Section 10.2. Energy Efficiency

10.2.1. GENERAL

10.2.1.1. Application

- 1) This Section does not apply to *buildings* described in Sentence 1.3.3.3.(1) of Division A.

10.2.2. DESIGN AND INSTALLATION

10.2.2.1. Design and Installation

- 1) *Buildings* shall be designed and constructed to conform to
 - a) ANSI/ASHRAE/IESNA 90.1, "Energy Standard for Buildings Except Low-Rise Residential Buildings",
 - b) the NECB, or
 - c) Subsection 10.2.3.
- 2) Where a *building* contains one or more *major occupancies* that conform to Subsection 10.2.3., the remaining *major occupancies* shall comply with Clause (1)(a) or (b).

10.2.3. ENERGY STEP CODE

10.2.3.1. Application

- 1) This Subsection applies to *buildings*
 - a) containing any of the following *major occupancies*:
 - i) *residential*,
 - ii) *business and personal services*, or
 - iii) *mercantile*, and
 - b) located where the degree-days below 18°C value is less than 3000.

(See Sentence 1.1.3.1.(1) of Division B and Table C-2 in Appendix C.)

10.2.3.2. Definitions

- 1) For the purpose of this Subsection, the term "total energy use intensity" shall mean a metric of the energy, estimated by using an energy model in accordance with Article 10.2.3.4., used over a year, normalized per square metre of floor area of *conditioned space* and expressed in kWh/(m²-year), from all of the following combined:
 - a) space-heating equipment,
 - b) space-cooling equipment,
 - c) fans,
 - d) interior and exterior lighting devices,

- e) service water heating equipment,
- f) pumps,
- g) auxiliary HVAC equipment (see A-9.36.6.2.(1)(f) in Appendix A),
- h) receptacle loads and miscellaneous equipment,
- i) appliances, and
- j) elevators and escalators.

2) For the purpose of this Subsection, the term “thermal energy demand intensity” shall mean a metric of the annual heating required by the *building* for space conditioning and for conditioning of ventilation air, estimated by using an energy model in accordance with Article 10.2.3.4., normalized per square metre of area of *conditioned space* and expressed in kWh/(m²-year), taking into account all of the following:

- a) thermal transmittance of above-ground walls and roof-ceiling assemblies,
- b) thermal transmittance of floors and walls in contact with the ground, or space that is not *conditioned space*,
- c) thermal transmittance and solar heat gain of windows, doors and skylights,
- d) air leakage through the air barrier system,
- e) internal heat gains from occupants and equipment, and
- f) heat recovery from exhaust ventilation.

(See Appendix A.)

3) For the purpose of this Subsection, the term “Step” shall mean a Step referred to in Tables 10.2.3.3.A. and B.

10.2.3.3. Compliance Requirements

1) Except as permitted by Sentence (3), *buildings* and *major occupancies* conforming to the requirements of any of Steps 1 to 4 shall be designated and constructed to conform to the applicable energy performance requirements in Tables 10.2.3.3.A. and B.

Table 10.2.3.3.A.
Energy Performance Requirements for Residential Occupancies
 Forming Part of Sentences 10.2.3.3.(1) and (2)

Step	Equipment and Systems – Maximum Total Energy Use Intensity (kWh/m ² -year)	Building Envelope – Maximum Thermal Energy Demand Intensity (kWh/m ² -year)
1	Conform to Part 8 of the NECB	
2	130	45
3	120	30
4	100	15

Table 10.2.3.3.B.
Energy Performance Requirements for Business and Personal Services or Mercantile Occupancies
 Forming Part of Sentences 10.2.3.3.(1) and (2)

Step	Equipment and Systems – Maximum Total Energy Use Intensity (kWh/m ² .year)	Building Envelope – Maximum Thermal Energy Demand Intensity (kWh/m ² .year)
1	Conform to Part 8 of the NECB	
2	170	30
3	120	20

- 2) Except as permitted by Sentence (3),
 - a) energy performance shall be calculated in conformance with Article 10.2.3.4., and
 - b) airtightness shall be tested in accordance with Article 10.2.3.5.
- (See Appendix A.)

3) *Buildings* and *major occupancies* designed and constructed to conform to Step 4 of Table 10.2.3.3.A or to Step 3 in Table 10.2.3.3.B, and to the Passive House Planning Package, version 9 or newer, are deemed to comply with this Subsection provided the energy model according to which the *building* or the *major occupancy* of the *building* is designed and constructed is prepared by a Certified Passive House Designer, or Certified Passive House Consultant, who is approved by the Passive House Institute.

(See also Sentence 10.2.2.1.(2).)

10.2.3.4. Energy Modelling

1) Except as required by Sentence (2), for *buildings* and *major occupancies* conforming to the requirements of any of Steps 1 to 4, energy modelling shall conform to

- a) the applicable requirements of Part 8 of the NECB, and (See Appendix A.)
- b) the City of Vancouver Energy Modelling Guidelines.

2) Except as permitted by Sentence (3), energy modelling for *buildings* and *major occupancies* conforming to the requirements of any of Steps 2 to 4 shall account for the air leakage rate derived in accordance with Article 10.2.3.5.

(See Appendix A.)

3) Energy modelling is permitted to account for an air leakage rate of 0.25 L/(s·m²) until the air leakage rate determined by Sentence (2) is available.

(See Appendix A.)

10.2.3.5. Building Envelope Airtightness Testing

1) Except as required by Sentence (2), *buildings* and *major occupancies* shall be tested for airtightness in accordance with

- a) ASTM E 779, “Standard Test Method for Determining Air Leakage Rate by Fan Pressurization”, or
- b) USACE Version 3, “Air Leakage Test Protocol for Building Envelopes”.

(See Appendix A.)

2) Where airtightness is determined in accordance with Sentence (1) with intentional openings for mechanical equipment left unsealed, the airtightness rate shall be adjusted in the energy model calculations to account for air leakage through mechanical equipment.

3) *Buildings* and *major occupancies* shall be tested for airtightness to an induced test pressure of not less than 75 Pa.

Division 3 – Changes to Appendix A of Division B

13 The following Appendix Notes are added to Appendix A of Division B:

A-6.2.2.1.(4) Ventilation Air Supplied to Suites

The indirect supply of required outdoor ventilation air to normally occupied spaces through corridor pressurization or other indirect systems is not permitted.

A-9.36.6.2.(1)(f) Auxiliary HVAC Equipment

This category of equipment generally includes cooling tower fans, humidifiers and other devices that do not directly fall under one of the other categories listed in Sentence 8.4.2.2.(1) of the NECB.

A-9.36.6.3.(2) Airtightness Testing for Step 1

Although there is no airtightness requirement for buildings conforming to the requirements of Step 1, these buildings must still be tested in accordance with Article 9.36.6.5. and their air barriers must meet the requirements of Subsection 9.25.3.

Buildings conforming to the requirements of Step 1 must also conform to Subsection 9.36.5. Although Sentence 9.36.5.10.(9) provides the option of using the airtightness as tested in the energy modelling, using the result in the energy model is not required.

A-9.36.6.4.(2)(b) EnerGuide Rating System

Although not a requirement of the British Columbia Building Code, users of the EnerGuide Rating System (ERS) must be energy advisors registered and in good standing with Natural Resources Canada in accordance with the EnerGuide Rating System Administrative Procedures and must adhere to the technical standards and procedures of the ERS. These standards and procedures are available through Natural Resources Canada and include program requirements for energy modelling using the ERS.

A-9.36.6.4.(2)(c) NECB

Although the energy model calculation methods of the NECB are permitted to be used, the results of those calculations must reflect the definitions and the requirements related to mechanical energy use intensity, thermal energy demand intensity, and peak thermal load as set out in Articles 9.36.6.2. and 9.36.6.3., and not the Annual Energy Consumption as required by Part 8 of the NECB.

A-9.36.6.4.(4) Air Leakage Rate in Energy Model Calculations

For Step 1 buildings, airtightness testing must be performed as required by Sentence 9.36.6.3.(2) and reported as required by Division C, but there is no minimum level of airtightness required. See Sentence 9.36.5.10.(9) for

requirements for the airtightness value to be used in the energy model calculations for Step 1 buildings using Subsection 9.36.5.

For buildings that must conform to the requirements of any of Steps 2 to 5, higher than expected air leakage may require the building design to be altered and the energy model calculations to be repeated. Alternatively, the air leakage rate could be retested after making alterations to the air barrier system to attain the desired air leakage rate.

A-10.2.3.2.(2) Thermal Energy Demand Intensity (TEDI)

TEDI does not include receptacle loads and energy use from unusual uses such as spas and computer server rooms.

A-10.2.3.3.(2) Energy Model Calculations for Step 1

Although the total energy use intensity and thermal energy demand intensity are not required for NECB conformance, they must still be calculated in conformance with Article 10.3.1.4. and reported in accordance with Subsection 2.2.9. of Division C.

A-10.2.3.4.(1)(a) and (2) Energy Model Calculations for Steps 2 to 4

Notwithstanding the requirements of Part 8 of the NECB, a reference building and building energy target are not required for compliance with the requirements of Steps 2 to 4 in Article 10.2.3.3. The performance requirements of Table 10.2.3.3.A. and Table 10.2.3.3.B. are used to determine compliance.

A-10.2.3.4.(3) Air Leakage Rate in Energy Model Calculations

The requirement to account for the air leakage rate as tested in all energy model calculations, other than for Step 1 buildings, supersedes the NECB, which permits an assumed air leakage value of 0.25 L/(s·m²) to be used for energy model calculations. For buildings that must conform to the requirements of any of Steps 2 to 4, higher than expected air leakage may require the building design to be altered and the energy model calculations to be repeated. Alternatively, the air leakage rate could be retested after making alterations to the air barrier system to attain the desired air leakage rate.

A-10.2.3.4.(3) Air Leakage Rate in Energy Model Calculations for Step 1

Although the air leakage rate as tested of the building need not be used for the purposes of conforming with Part 8 of the NECB and Sentence 10.2.3.4.(2), Article 2.2.9.1. of Division C requires that the air leakage rate as tested be used in the calculation of the total energy use intensity and thermal energy demand intensity for reporting purposes on the drawings and specifications. This will typically require Step 1 energy model calculations to be redone after the airtightness test. It is not intended that the results of the airtightness test for buildings that must conform to the requirements of Step 1 influence the compliance of the building with Article 10.2.3.3.

A-10.2.3.4.(3) Air Leakage Rate

The air leakage rate of 0.25 L/(s·m²), which is a typical infiltration rate at 5 Pa, is for calculation purposes and may not reflect the real rate encountered under actual operating conditions; it is based on assumed typical operating pressure differentials.

A-10.2.3.5.(1) Building Airtightness Testing Requirements

The intent of this testing is to quantify the airtightness level of the air barrier system, not airtightness of the building at in-service operating conditions.

Division 4 – Changes to Attribution Tables of Division B

- 14** *Table 6.4.1.1. in the Attribution Tables of Division B is amended by adding the following under the heading “6.2.2.1. Required Ventilation”:*

(4)	[F50-OH1.1]
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- 15** *Table 9.38.1.1. is amended by adding the following items:*

9.36.6.3. Compliance Requirements	
(1)	[F85, F86, F90, F91, F92, F93, F95, F96, F98, F99-OE1.1]
9.36.6.5. Building Envelope Airtightness Testing	
(1)	[F90-OE1.1]

- 16** *Table 10.4.1.1. is repealed and the following substituted:*

Table 10.4.1.1.	
Objectives and Functional Statements Attributed to the Acceptable Solutions in Part 10	
Forming Part of Sentence 10.4.1.1.(1) of Division B	
Acceptable Solutions	Functional Statements and Objectives ⁽¹⁾
10.2.1.1. Design	
(1)	[F85-OE1.1] [F86-OE1.1]
(2)	[F85-OE1.1]
(3)	[F85-OE1.1]
(4)	[F85-OE1.1]
(5)	[F85-OE1.1]
10.2.3.3. Compliance Requirements	
(3)	[F85, F86, F90, F91, F92, F93, F95, F96, F98, F99, F100-OE1.1]
10.2.3.5. Building Envelope Airtightness Testing	
(1)	[F90-OE1.1]
10.3.1.1. Fixture Fitting Maximum Flow Rates	
(1)	[F84-OE2.1, OE2.2]
10.3.1.2. Fixture Efficiency	
(1)	[F83-OE2.1, OE2.2]
(2)	[F83-OE2.1, OE2.2]

Notes to Table 10.4.1.1.:

⁽¹⁾ See Parts 2 and 3 of Division A.

Division 5 – Changes to Division C

- 17** *Sentence 2.2.8.1.(1) of Division C is amended by striking out “Subsection 9.36.5. of Division B” and substituting “Subsection 9.36.5. or 9.36.6. of Division B”.*

18 Article 2.2.8.3. is amended by adding the following Sentence:

- 3) Where a *building* complies with Subsection 9.36.6. of Division B, the energy performance data summary in Clause (2)(c) shall also contain
 - a) the mechanical energy use intensity,
 - b) the thermal energy demand intensity,
 - c) the peak thermal load,
 - d) where applicable, the EnerGuide Rating % lower than EnerGuide Reference House for the *building*,
 - e) for *buildings* conforming to Step 1, the airtightness of the *building* as tested, derived in accordance with Article 9.36.6.5. of Division B, and recorded in air changes per hour at 50 Pa, and
 - f) for *buildings* conforming to any of Steps 2 to 5, the airtightness of the *building* as tested that is accounted for in accordance with Sentence 9.36.6.4.(4) of Division B, and derived in accordance with Article 9.36.6.5., recorded in air changes per hour at 50 Pa.

19 The following Subsection is added:

2.2.9. Drawings, Specifications and Calculations for Subsection 10.2.3

2.2.9.1. Application

- 1) This Subsection applies to *buildings* and *major occupancies* in *buildings* to which Subsection 10.2.3. of Division B applies.

2.2.9.2. Information Required on Drawings and Specifications

- 1) For *buildings* and *major occupancies* that are designed and constructed in compliance with Subsection 10.2.3. of Division B, plans or specifications shall indicate
 - a) the total energy use intensity as defined by Sentence 10.2.3.2.(1) of Division B,
 - b) the energy use intensity of major energy services separately, including
 - i) space heating,
 - ii) space cooling,
 - iii) service water heating,
 - iv) lighting, and
 - v) other plug loads,
 - c) the thermal energy demand intensity as defined by Sentence 10.2.3.2.(2) of Division B,
 - d) for *buildings* conforming to Step 1, the air leakage rate as tested, derived in accordance with Article 10.2.3.5. of Division B, and recorded in L/(s·m²) at 75 Pa, and

- e) for *buildings* conforming to any of Steps 2 to 5, the air leakage rate as tested that is accounted for in accordance with Sentence 10.2.3.4.(2) and derived in accordance with Article 10.2.3.5. of Division B, recorded in in $L/(s \cdot m^2)$ at 75 Pa.
- 2) The total energy use intensity in Clause (1)(a) and the thermal energy demand intensity in Clause (1)(c) shall account for the airtightness referenced in Clause (1)(d).

20 Schedule B is repealed and the attached Schedule B is substituted.

SCHEDULE B
Forming Part of Subsection 2.2.7, Div. C of the
British Columbia Building Code

Building Permit No. _____
(for authority having jurisdiction's use)

**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., Association of Professional Engineers and Geoscientists of B.C., Building Officials' Association of B.C., and Union of B.C. Municipalities.
(iii) In this letter the words in italics have the same meaning as in the British Columbia Building Code.

To: The authority having jurisdiction

Name of Jurisdiction (Print)

Re: _____
Name of Project (Print)

Address of Project (Print)

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

(Professional's Seal and Signature)

Date

components of the plans and supporting documents prepared by this registered professional of record in support of the application for the building permit as outlined below substantially comply with the B.C. Building Code 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

1 of 4

Schedule B - Continued

Building Permit No.
(for authority having jurisdiction's use)

Project Address

Discipline

The undersigned also undertakes to notify the authority having jurisdiction 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 British Columbia Building Code.

Registered Professional of Record's Name (Print)

Address (Print)

Phone No.

Professional's Seal and Signature

Date

(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 British Columbia Building Code 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 Permit No.
(for authority having jurisdiction'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 fire fighting 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, ASHRAE or NECB requirements
- 1.25 Building envelope, testing or confirmation of Part 10 requirements

(Professional's Seal and Signature)

Date

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

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/ASHRAE requirements
- 3.9 Building envelope, testing/confirmation of Part 10 requirements

CRP's Initials

Schedule B - Continued

Building Permit No.
(for authority having jurisdiction'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, ASHRAE or NECB requirements
- 4.10 Plumbing systems, testing/confirmation of Part 10 requirements

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, ASHRAE or NECB requirements
- 6.10 Electrical Systems, testing/confirmation of Part 10 requirements

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)

Date

GRP's Initials

21 Schedule C-A is repealed and the attached Schedule C-A is substituted.

BRITISH COLUMBIA BUILDING CODE 2017

SCHEDULE C-A
Forming Part of Subsection 2.2.7, Division C of the
British Columbia Building Code

Building Permit No. _____
(For authority having jurisdiction's use)

**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 *authority having jurisdiction*.
(ii) This letter is endorsed by: Architectural Institute of BC, Association of Professional Engineers and Geoscientists of BC, Building Officials' Association of BC, and Union of BC Municipalities.
(iii) In this letter the words in *italics* have the same meaning as in the British Columbia Building Code.

To: The *authority having jurisdiction*

Name of Jurisdiction (Print) _____
Re: _____
Name of Project (Print) _____
Address of Project (Print) _____
Legal Description of Project (Print) _____

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

Name (Print) _____
(Professional's Seal and Signature)

Address (Print) _____

Phone No. _____ Date _____

I hereby give assurance that

- (a) I have fulfilled my obligations for coordination of field review of the registered professionals required for the project as outlined in Subsection 2.2.7, Division C of the British Columbia Building Code 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 BC Building Code 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 have coordinated the compliance of the building with Part 10 requirements,
- (d) I am a registered professional as defined in the British Columbia Building Code.

(If the *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 British Columbia Building Code 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

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