



SB-10 Energy Efficiency Design Summary Form Part 9 – Non Residential

This form is authorized by the City of Niagara Falls Building By-law [2013-178]
Updated: January 2015

Form Applicability

This form is based on Building Supplementary Standard SB-10 Division 4 and is only applicable in applications whereby all of the following criteria is true for the proposed construction. The Building:

- 1. is within the Scope of Part 9: True False
- 2. only contains non – residential occupancies True False
- 3. uses a heating system other than electric space heating True False
- 4. is intended to be occupied during the winter months on a continuous basis True False

AND

- 5. Gross Fenestration Area: m² to Gross Wall Area m² = Fenestration to Wall Ratio: %
Fenestration to Wall Ration is ≤ 40% True False

If the response to any of the questions above is false, this form is not applicable to the intended application. Please select a more appropriate form or refer to Supplementary Standard SB-10 for direction.

A. Project information

Street Address: _____ Unit No. _____ Lot/Con: _____

B. Designer information

Architectural Designer

Last Name: _____ First Name: _____ BCIN: _____
 Corporation or Partnership: _____
 Street Address: _____ Unit No. _____ Lot/Con: _____
 Municipality: _____ Postal Code: _____ Province: _____
 Telephone Number: _____ Cell Number: _____ Email: _____

Mechanical Engineer / Designer

Last Name: _____ First Name: _____ BCIN: _____
 Corporation or Partnership: _____
 Street Address: _____ Unit No. _____ Lot/Con: _____
 Municipality: _____ Postal Code: _____ Province: _____
 Telephone Number: _____ Cell Number: _____ Email: _____

Electrical Engineer / Designer

Last Name: _____ First Name: _____ BCIN: _____
 Corporation or Partnership: _____
 Street Address: _____ Unit No. _____ Lot/Con: _____
 Municipality: _____ Postal Code: _____ Province: _____
 Telephone Number: _____ Cell Number: _____ Email: _____

C. Building Envelope Thermal Performance

[SB-10 Division 4, Article 1.1.1.2]

The Building Zone for the City of Niagara Falls is Zone 2 which has 5000 or more degree days. The following table lists only those values for Zone 2.

Building envelope requirements based on degree day zone (SI) – [referenced from Table 1.1.1.2]

Building Assembly – Opaque Elements	Assembly Maximum U-Value ⁽¹⁾	Insulation Minimum RSI-Value	Design Thermal Resistance Value	RSI or U/C Value
Roofs without Attic Space – Insulation above deck	U-0.158	6.16ci		<input type="checkbox"/> RSI <input type="checkbox"/> U
Roofs with Attic Space and other	U-0.096	10.56		<input type="checkbox"/> RSI <input type="checkbox"/> U
Walls Above Grade	U-0.312	2.28 + 1.76ci		<input type="checkbox"/> RSI <input type="checkbox"/> U
Walls Below Grade	C-0.522 ⁽²⁾	1.76ci		<input type="checkbox"/> RSI <input type="checkbox"/> U
Exposed Floors – Lightweight framing ⁽³⁾	U-0.181	6.69 ⁽³⁾		<input type="checkbox"/> RSI <input type="checkbox"/> U
Exposed Floors – Mass	U-0.244	3.52ci		<input type="checkbox"/> RSI <input type="checkbox"/> U
Slab on Grade Floors (perimeter + below slab) – Unheated		2.64 for 600mm + 0.88ci		<input type="checkbox"/> RSI <input type="checkbox"/> U
Slab on Grade Floors (perimeter + below slab) – Heated		3.52 for 900mm + 0.88ci		<input type="checkbox"/> RSI <input type="checkbox"/> U

- Note: (1) Overall thermal transmittance value of the entire assembly includes air films and thermal bridging
 (2) C-Value is overall thermal conductance of the assembly but it does not include soil or air films
 (3) Where the floor framing depth is 254mm or less, the insulation is permitted to meet a minimum RSI-Value of 5.28
 (4) All opaque surfaces must comply with either the minimum RSI value of added insulation in cavities and continuous insulation (ci) requirements or the maximum overall thermal transmittance (U-value) of the entire assembly, where the U-value is provided.

Building Assembly	Assembly Maximum U-Value ⁽¹⁾	Assembly Maximum SHGC	Design U-Value	Design SHGC
Vertical Fenestration – Windows	U-1.703	0.45		
Skylight with curb	U-3.917	0.50		
Skylight without curb	U-2.555	0.46		

Note: (1) Overall thermal transmittance value of the entire assembly includes air films and thermal bridging

If U-values are being used for compliance, calculations for determining these values have been attached: Yes N/A

The exception for swinging glass doors to allow for an RSI value of doors ≥ RSI 0.7 is being used: Yes N/A

D. Air infiltration

[SB-10 Division 4, Article 1.1.1.3]

Building component or assembly contains an air barrier system conforming to Part 5 or Section 9.25 of the OBC? Yes N/A

E. Heating, Ventilation and Air Conditioning

[SB-10 Division 4, Article 1.1.1.4]

- Each HVAC system serves a single HVAC zone Yes N/A
- Energy efficiency of the HVAC equipment complies with Supplementary Standard SB-10 Clause 1.1.2.1.(1)(c) of Chapter 1 of Division 3 Yes N/A
- Cooling capacity of a single A/C unit ≥ 40 kW Yes No
- If the cooling capacity of single A/C unit < 40 kW the following is n/a.
 If the cooling capacity of single A/C unit ≥ 40 kW, the unit: Yes N/A
- has an economizer
 - is controlled by high limit shut off
 - is equipped with barometric or powered relief
 - has outdoor air dampers provided with blade and jamb seals
- Heat Recovery Ventilator provided where outdoor air is more than 1400 L/s and 70% of supply air system Yes N/A
- Where a Heat Recovery Ventilator (HRV) is used, the system has provision to by-pass or control the HRV to permit proper operation of the air economizer Yes N/A
- HVAC system is controlled by a manual changeover thermostat or dual set point thermostat
- HVAC system with greater capacity than 4.4 kW and a supply fan motor more than 0.5kW provided with time check and programmable thermostat Yes N/A
- HVAC system greater than 5000 L/s provided with optimum start controls Yes N/A

F. Ducts, Plenums and Piping

[SB-10 Division 4, Article 1.1.1.5]

- Duct or plenum not protected by an insulated exterior wall or exposed to an unheated space is sealed to Class A seal level and insulated to RSI 1.4 Yes N/A
- Supply, exhaust duct or plenum in conditioned space sealed to SMACNA Class C seal level Yes N/A

Minimum thickness of pipe insulation – Table 1.1.1.5

Use of Pipe	Nominal Pipe Size not more than 40mm	Nominal Pipe Size more than 40mm
Steam	40	65
Hot water heating	40	50
Domestic hot water	25	50
cooling	12	25

- Pipes used for steam, hot water heating or cooling comply with Table 1.1.15 Yes N/A
- Insulation exposed to weather is protected by covering Yes N/A
- Non continuous exhaust systems with capacity of more than 140 L/s equipped with gravity or motorized damper Yes N/A
- Air duct distribution system is balanced and fans exceeding 0.75 kW are balanced for design airflow Yes N/A
- Hydronic system is balanced Yes N/A

G. Service Water Heating

[SB-10 Division 4, Article 1.1.1.6]

- Energy efficiency of water heating equipment complies with Supplementary Standard SB-10 Clause 1.1.2.1.(1)(c) of Chapter 1 of Division 3 Yes N/A
- Domestic hot water piping is insulated in accordance with Table 1.1.1.5 for the following types of pipe:
 - Recirculating piping Yes N/A
 - First 2.5m of a non-recirculating system (constant temperature storage system) Yes N/A
 - Piping between inlet pipe and heat trap Yes N/A
 - Heat traced Yes N/A
- Hot water storage tank is provide with temperature control Yes N/A
- Where a recirculating hot water system or heat trace is used, control to switch off system is provided Yes N/A
- Hot water discharge temperature limited to maximum 43°C for lavatory faucets in public washrooms Yes N/A
- Vertical pipe risers that serve a storage water heater or hot water tank are equipped with heat traps Yes N/A
- Where a system has been designed that provides both space heating and domestic water heating, the system efficiencies meet those required by SB-10 Clause 1.1.2.1. (1)(c) of Chapter 1 of Division 3 Yes N/A

H. Lighting

[SB-10 Division 4, Article 1.1.1.7]

- Except as permitted y SB-10 1.1.1.7(4), luminaires designed for use with one or three linear fluorescent lamps greater than 30W each use two-lamp tandem-wired ballasts in place of single-lamp ballasts when two or more luminaires are in the same space on the same control device. Yes N/A

I. Interior lighting

[SB-10 Division 4, Article 1.1.1.8]

- Allowable interior lighting power density (from Table 1.1.18. SB-10): W/m²
- Gross lighted area of building: m²
- Interior lighting power allowance (allowable lighting power density X gross lighted area of building) (ILPA) W
- Interior connected lighting power (CLPi): W
- CLPi < ILPA Yes No
- Calculations attached Yes N/A

J. Interior lighting controls

[SB-10 Division 4, Article 1.1.1.9]

- If building exceeds 500m² the interior lighting is controlled by automatic control device to shut off building lighting in all spaces (except for emergency lighting, 24 hour lighting, or safety / security lighting) Yes N/A
- The control device operates on a programmable schedule for each floor or occupant sensor or signal from another control / alarm system Yes N/A
- Each room has a t least one accessible control independent of general lighting control Yes N/A
- Individual control device is capable of being activated manually or automatically, controls a floor area of 240m² maximum, and is capable of overriding for not more than 4 hours Yes N/A
- Conference rooms, meeting rooms, lunch rooms are equipped with automatic control devices that turn of lights within 30 minutes of occupants leaving Yes N/A
- Separate controls provided for task lighting Yes N/A

K. Exterior lighting**[SB-10 Division 4, Article 1.1.1.10]**

Exterior Lighting Power Alliance (ELPA): kW

Exterior Connected Lighting Power (CLPe): kW

CLPe < ELPA Yes NoCalculations attached Yes N/AExterior building grounds luminaires exceeding 100 W contain lamps with a minimum efficacy of 10 lm/W unless controlled by a motion sensor. Yes N/A**L. Exterior lighting controls****[SB-10 Division 4, Article 1.1.1.11]**Except as permitted, exterior lighting has automatic controls Yes N/ATime switch or photo sensor control is provided for dusk to dawn lighting Yes N/ATime switch is provided for lighting not designated for dusk to dawn operation Yes N/A**M. Electric motors****[SB-10 Division 4, Article 1.1.1.12]**Electric motor efficiency levels comply with the requirements of Chapter 2, Division 3 of SB-10 Yes N/A**N. Declaration**

I, _____, acknowledge that the information contained in this application, attached plans and specifications, and other attached documentation is true to the best of my knowledge and that if the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date:

Signature:

Form Disclaimer

This form and integrated checklist is based on Division 4 of the Ontario Building Code Supplementary Standard SB-10.

This form is not a substitute for complying with the requirements of the Ontario Building Code. While care has been taken to ensure accuracy, this form is provided for convenience of application only. Designers must refer to the actual wording and requirements of the Ontario Building Code.

This form is made available for Building Code users by the City of Niagara Falls Building Services Division. Users should always refer to the actual Ontario Building Code when researching applicable regulations as well as when completing this form. Building Services or the City of Niagara Falls does not assume any responsibility for errors or oversights resulting from the information contained herein.