

ONTARIO BUILDING CODE AND SUPPLEMENTARY STANDARD SB-10

PROJECT INFORMATION

Project:	Location:
Building Permit Application No.:	Date:

Architectural Designer Information*	Mechanical Designer Information*	Electrical Designer Information*
Name	Name	Name
Address	Address	Address
City Province	City Province	City Province
Signature Date(YY/MM/DD)	Signature Date(YY/MM/DD)	Signature Date(YY/MM/DD)

*IF MORE DESIGNERS ARE INVOLVED, PROVIDE ADDITIONAL COPIES OF THIS FORM.

THIS CHECKLIST IS A CONVENIENCE DOCUMENT ONLY AND IS BASED ON THE ENERGY EFFICIENCY REQUIREMENTS DESCRIBED IN THE ONTARIO BUILDING CODE SUPPLEMENTARY STANDARD SB-10 DIVISION 2. THIS CHECKLIST IS NOT A SUBSTITUTE FOR COMPLYING WITH THE REQUIREMENTS OF THE ONTARIO BUILDING CODE. WHILE CARE HAS BEEN TAKEN TO ENSURE ACCURACY OF THIS CHECKLIST, DESIGNERS AND BUILDING OFFICIALS MUST REFER TO THE ACTUAL WORDING AND REQUIREMENTS OF THE ONTARIO BUILDING CODE (O.REG. 332/12 AND AMENDMENTS UP TO DECEMBER 23, 2013).

THIS CHECKLIST IS MADE AVAILABLE FOR CODE USERS BY THE MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING. USERS SHOULD ALWAYS CONSULT WITH THE AUTHORITY HAVING JURISDICTION, IF THE CHECKLIST IS GOING TO BE SUBMITTED TO THAT AUTHORITY. THE MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING DOES NOT ASSUME RESPONSIBILITY FOR ERRORS OR OVERSIGHTS RESULTING FROM THE INFORMATION CONTAINED HEREIN.

PLEASE FILL IN THE ACTUAL VALUES INSTALLED AND CHECK BOXES AS THEY APPLY.

OBC SB-10 COMPLIANCE SUMMARY

Energy Efficiency Design:

There are four energy compliance options to meet the requirements of OBC SB-10 Division 2. Please select the conformance option selected for this project. The energy efficiency of all buildings must be designed to:

Compliance Path		Forms to Complete
<p>(A-1) Exceed by not less than 25% the energy efficiency levels attained by conforming to the CCBFC, “Model National Energy Code for Buildings (MNECB).”</p> <p><i>Note that this compliance path requires that the proposed building is shown to consume at least 25% less energy than the MNECB reference building when modelled according to the procedures outlined in Part 8 of the MNECB.</i></p>	<input type="checkbox"/> YES	FORM A
<p>(A-2) Exceed by not less than 5% the energy efficiency levels attained by conforming to the ANSI/ASHRAE/IESNA 90.1 - 2010 “Energy Standard for Buildings Except Low-Rise Residential Buildings.”</p> <p><i>Note that this compliance path requires that the proposed building is shown to consume at least 5% less energy than the ASHRAE 90.1-2010 reference building when modelled according to the procedures outlined in Chapter 11 of ASHRAE 90.1-2010.</i></p> <p><i>Note that this path cannot be used for a building with electric space heating. Refer to SB-10.</i></p>	<input type="checkbox"/> YES	FORM A
<p>(B) Achieve the energy efficiency levels attained by conforming to the ASHRAE 90.1-2010, “Energy Standard for Buildings Except Low-Rise Residential Buildings” and Division 2 of SB-10.</p> <p><i>This compliance path includes both prescriptive and performance path options. Please proceed to Form B.</i></p>	<input type="checkbox"/> YES	FORM B
<p>(C) Achieve the energy efficiency levels attained by conforming to the NECB-2011 National Energy Code of Canada for Buildings and Division 2 of SB-10.</p> <p><i>This compliance path includes both prescriptive and performance path options. Please proceed to NECB Forms</i></p>	<input type="checkbox"/> YES	NECB Forms

**OBC SB-10 COMPLIANCE (1) EXCEED MNECB BY NOT LESS THAN 25%
(2) EXCEED ASHRAE 90.1-2010 BY NOT LESS THAN 5%**

FORM A

Please select which of the two options pursued for compliance:

PROPOSED BUILDING IS SHOWN TO CONSUME AT LEAST 25% LESS ENERGY (GJ or kWh) ANNUALLY THAN THE MNECB REFERENCE BUILDING. ENERGY CONSUMPTION VALUES ARE DETERMINED ACCORDING TO THE MODELLING PROCEDURES IDENTIFIED IN PART 8 OF THE MNECB.	<input type="checkbox"/> YES
PROPOSED BUILDING IS SHOWN TO CONSUME AT LEAST 5% LESS ENERGY (GJ or kWh) ANNUALLY THAN THE ASHRAE 90.1-2010 REFERENCE BUILDING. ENERGY CONSUMPTION VALUES ARE DETERMINED ACCORDING TO THE MODELLING PROCEDURES OUTLINED IN CHAPTER 11 OF ASHRAE 90.1-2010.	<input type="checkbox"/> YES

Project:		Modeller Name:			
		Annual Energy Summary ⁽¹⁾			
Occupancies	Floor Area	Annual Consumption Summary	Reference Building Energy	Proposed Building Energy	Units
<input type="checkbox"/> Assembly	_____	Space Heating	_____	_____	_____
<input type="checkbox"/> Health/Institutional	_____	Space Cooling	_____	_____	_____
<input type="checkbox"/> Hotel/Motel	_____	HVAC Auxiliary	_____	_____	_____
<input type="checkbox"/> Light Manufacturing	_____	Misc. Electrical	_____	_____	_____
<input type="checkbox"/> Multifamily	_____	Service Hot Water	_____	_____	_____
<input type="checkbox"/> Office	_____	Interior Lighting	_____	_____	_____
<input type="checkbox"/> Restaurant	_____	Other _____	_____	_____	_____
<input type="checkbox"/> Retail	_____	Other _____	_____	_____	_____
<input type="checkbox"/> School	_____				
<input type="checkbox"/> Warehouse	_____				
<input type="checkbox"/> Other	_____				
Total	_____	Total Annual Energy	_____	> _____	_____
		Percentage less energy used by proposed building:	_____		
<input type="checkbox"/> Proposed Building Description	_____	Total Annual CO ₂ e Emissions	_____	> _____	
_____		Percentage less CO ₂ e emissions by proposed building		_____	
_____		Peak Electric Demand	_____	> _____	<input type="checkbox"/> YES or
_____		Building components specified in Sentence 1.1.2.3.(2) of Chapter 1 of Division 2 of SB-10 comply with the prescriptive requirements of ASHRAE 90.1-2010 <input type="checkbox"/> YES			
_____		Reference Building Energy and Proposed Building Energy Consumptions are calculated by:			
_____		Please specify modelling software: _____			
HVAC System Descriptions		Energy Efficiency Features in Proposed Building Design⁽²⁾			
Reference Building Design		_____			
_____		_____			
_____		_____			
Proposed Building Design		_____			
_____		_____			
_____		_____			
_____		_____			

The reference building and proposed building design are modelled in accordance with the requirements of the SB-10 and the applicable standard specified above ☐ Yes

The information submitted above is accurate to the best of my knowledge.

Signature:	Name/Title:
------------	-------------

Notes: (1) Verify with building official whether full modelling report is required to be submitted.
(2) Explain major energy saving features utilized to achieve modelled savings.

OBC SB-10 AND ASHRAE 90.1 - 2010 – COMPLIANCE SUMMARY**Form B**

Project:	Location of Project:
Building Permit Application No.:	Climate Zone:

ASHRAE 90.1 – 2010 COMPLIANCE AS MODIFIED BY OBC SB-10 DIVISION 2

The building design complies with the mandatory provisions of the following sections regardless of the compliance path:

ASHRAE 90.1-2010 Standard Section	Compliance Column	Form
5.4 BUILDING ENVELOPE AND SB-10 DIVISION 2	<input type="checkbox"/> YES	FORM 5.4
6.4 HEATING, VENTILATING AND AIR CONDITIONING AND SB-10 DIVISION 2	<input type="checkbox"/> YES	FORM 6.3 or FORM 6.4
7.4 SERVICE WATER HEATING SYSTEMS AND EQUIPMENT AND SB-10 DIVISION 2	<input type="checkbox"/> YES	FORM 7.4
8.4 POWER AND SB-10 DIVISION 2	<input type="checkbox"/> YES	FORM 8.4
9.4 LIGHTING AND SB-10 DIVISION 2	<input type="checkbox"/> YES	FORM 9.4
10.4 OTHER EQUIPMENT AND SB-10 DIVISION 2	<input type="checkbox"/> YES	FORM 10.4

METHOD OF COMPLIANCE

Building Design must comply with either the Prescriptive Requirements or the Energy Cost Budget Method. Indicate which method was selected.

Compliance Method	Compliance Column	Form
PREScriptive COMPLIANCE	<input type="checkbox"/> YES	COMPLETE SECTION B-1
ENERGY COST BUDGET METHOD	<input type="checkbox"/> YES	COMPLETE SECTION B-2

B-1: PRESCRIPTIVE COMPLIANCE – ASHRAE 90.1-2010 AND OBC SB-10

The building design complies with the Prescriptive Compliance of the following sections:

Standard Section Reference		Compliance Column	Form
Sec 5 BUILDING ENVELOPE	Prescriptive Requirements (5.5 of 90.1)	<input type="checkbox"/> YES	FORM 5.5 or FORM 5.6
	Building Envelope Trade-Off (5.6 of 90.1)	<input type="checkbox"/> YES	
Sec 6 HVAC SYSTEMS	Simplified Approach for HVAC Systems	<input type="checkbox"/> YES	FORM 6.3 or FORM 6.4
	Mandatory + Prescriptive Path Option	<input type="checkbox"/> YES	
Sec 7 SERVICE WATER HEATING	Prescriptive Path Option	<input type="checkbox"/> YES	FORM 7.4
Sec 9 LIGHTING	Prescriptive Requirements	<input type="checkbox"/> YES	FORM 9.5

B-2: ENERGY COST BUDGET METHOD – ASHRAE 90.1-2010 AND OBC SB-10

	Compliance Column	Form
The building design complies with the provisions of Section 11 of ASHRAE 90.1-2010, based on the provisions of Division 2 of SB-10.	<input type="checkbox"/> YES	FORM 11

ASHRAE 90.1-2010 AND OBC SB-10 DIVISION 2– BUILDING ENVELOPE PROVISIONS**Form 5.4****SECTION 5.4 MANDATORY PROVISIONS**

Building insulation has been designed to comply with section 5.4.1 of ASHRAE 90.1-2010 as modified by Division 2 of OBC SB-10.	<input type="checkbox"/> YES
Building fenestration and doors have been designed to comply with section 5.4.2 of ASHRAE 90.1-2010 as modified by Division 2 of OBC SB-10.	<input type="checkbox"/> YES
Building air leakage has been designed to comply with section 5.4.3 of ASHRAE 90.1-2010 as modified by Division 2 of OBC SB-10.	<input type="checkbox"/> YES

ASHRAE 90.1-2010 & SB-10 – SECTION 5.5 – PRESCRIPTIVE ENVELOPE OPTION**Form 5.5-1****Section 5.5 Overall Building Design Requirements**

The building design must comply with the following general requirements. If any of these requirements are not met, the prescriptive path cannot be pursued. Consider the building envelope trade-off compliance or the Energy Cost Budget Method Described in Chapter 11 of ASHRAE 90.1-2010:

Identify SB-10 Table used for maximum U-Factors or minimum RSI-Values: _____

Gross Wall Area: _____m ² Vertical Fenestration Area: _____m ² Vertical fenestration area is less than 40% of the gross wall area	<input type="checkbox"/> YES
Gross Roof Area: _____m ² Skylight Area: _____m ² Total skylight area does not exceed 5% of the gross roof area	<input type="checkbox"/> YES
The vertical fenestration areas of the building meet the requirements of Section 5.5.4.5. of the ASHRAE 90.1-2010 as modified by Division 2 of OBC SB-10	<input type="checkbox"/> YES
If electric space heating is used, Table SB5.5-7 has been used regardless of climatic location	<input type="checkbox"/> YES <input type="checkbox"/> N/A
For Climate Zone 5, minimum skylight fenestration area conforms to the requirements of ASHRAE 90.1-2010 5.5.4.2.3.	<input type="checkbox"/> YES <input type="checkbox"/> N/A

Complete the table on Form 5.5-2 to show compliance for all envelope components. Attach as many copies of this form as required to ensure that all envelope components are represented.

For all opaque surfaces, compliance must be demonstrated by meeting either:

- 1. The minimum R-values of insulation added in framing cavities and continuous insulation as specified in Tables SB5.5-5 to SB5.5-7.*
- 2. The maximum U-factor, C-factor, or F-factor for the entire assembly as specified in Tables SB5.5-5 to SB5.5-7. U-factor is to be determined from tables in Appendix A of ASHRAE 90.1-2010 or through calculation methods described in ASHRAE 90.1-2010 Appendix Section A9.*

For all fenestration products, compliance with U-factors and SHGC must be determined for the overall fenestration product.

- 1. Fenestration shall have a U-factor and SHGC not greater than those specified in SB-10 Tables SB5.5-5 to SB5.5-7.*
- 2. U-factor to be determined through CSA or NFRC rating or by using ASHRAE 90.1-2010 Appendix A default values.*

Please complete the following table to include information on all walls, roofs, doors, and floors used in the design.

OPAQUE BUILDING ENVELOPE COMPONENTS

Opaque Element - Description ⁽¹⁾	Space Conditioning Category ⁽²⁾	Class of Construction ⁽³⁾	Criteria Max. U-Value ⁽⁴⁾ or Min RSI-Value	Design U-Value ⁽⁴⁾ or RSI-Value	Area Weighted Average Used ^{(5)?}
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH				<input type="checkbox"/> Y <input type="checkbox"/> N

Please complete the following table to include information on all fenestration products used in the design.

FENESTRATION ENVELOPE COMPONENTS

Fenestration - Description ⁽¹⁾	Space Conditioning Category ⁽²⁾	Class of Construction ⁽³⁾	U-Value ⁽⁴⁾		SHGC ⁽⁶⁾		Area Weighted Average Used ^{(5)?}
			Criteria	Design	Criteria	Design	
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N
	<input type="checkbox"/> NR <input type="checkbox"/> R <input type="checkbox"/> SH						<input type="checkbox"/> Y <input type="checkbox"/> N

- (1) Indicate if Element is a Wall, Roof, Floor, Door, Window or Skylight and a Tag or Description (eg Wall – W1).
- (2) Select from Non-residential (NR), Residential (R), or Semiheated (SH).
- (3) Select from the subclasses of roofs, walls, floors, doors and fenestration provided in Tables SB5.5-5 to SB5.5-7 (eg. Steel Framed for walls). Note that curtain wall systems are considered a steel framed wall.
- (4) F-Factors can be used for floors and C-Factors for below Grade Walls as applicable.
- (5) Elements of the same type, space category, and class of construction can be averaged using area weighting to show compliance only if U-Values are used.
- (6) Design SHGC may be higher than the criteria if the one of the exceptions from ASHRAE 90.1-2010 5.5.4.4.1 is applicable. Please use the space below to identify the fenestration elements (if any) which an exception for SHGC is being claimed:

SHGC EXCEPTIONS

Fenestration Element	SHGC Exception from ASHRAE 90.1-2010 5.5.4.4.1

Note that this option may only be pursued if the procedure as described in ASHRAE 90.1-2010 section 5.6 has been modified with the requirements of Division 2 of SB-10.

Complete only Section A or Section B

Section A (Complete only where software report contains the percentage of difference between budget and design buildings)

A software program incorporating the envelope requirements of ASHRAE 90.1-2010 as modified by SB-10 has been used to demonstrate compliance with SB-10 in accordance with rules set by Section 5.6 of ASHRAE 90.1-2010.	<input type="checkbox"/> YES
State the percentage by which the envelope performance of the proposed building is better than the budget building.	_____% , or <input type="checkbox"/> Equal
A report from this software is attached. Name of software: _____	<input type="checkbox"/> YES

Section B (Complete only where software report contains envelope performance factors for the budget and design buildings)

The compliance calculations are based on the envelope requirements of ASHRAE 90.1-2010 as modified by SB-10.	<input type="checkbox"/> YES
Envelope performance factor (EPF) for proposed building is less than or equal to the envelope performance factor of the budget building. Calculated EPF for proposed building: _____ Calculated EPF for budget building: _____	<input type="checkbox"/> YES
The envelope performance factor considers only the building envelope components.	<input type="checkbox"/> YES
Schedules of operation, lighting power, equipment power, occupant density, and mechanical systems are the same in both the proposed and budget building.	<input type="checkbox"/> YES
Calculations from ASHRAE 90.1-2010 Appendix C have been attached, and include the modifications from SB-10.	<input type="checkbox"/> YES

ASHRAE 90.1 & SB-10- SECTION 6.3 HVAC SIMPLIFIED APPROACH**Form 6.3***If simplified HVAC method is used complete this form, otherwise proceed to Form 6.4.*

Number of Stories:	Gross floor area: m ²
--------------------	----------------------------------

Reference		Standard Compliance
6.3.1	The building is 2 stories or less in height and has a gross floor area less than 2,323 m ² .	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.3.2	All of the requirements in Section 6.3 as outlined below must be met by each HVAC system in the facility.	
6.3.2.a	System serves a single HVAC zone.	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.3.2.b	The equipment meets the variable flow requirements of Section 6.4.3.10.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.c	If a cooling is installed, it is provided by a unitary packaged or split-system air conditioner that is either air-cooled or evaporatively cooled and meets the efficiency requirements shown in Tables 6.8.1A, 6.8.1B, and 6.8.1D.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.d	The system has an air economizer with outside airflow capacity and controls as required per Section 6.5.1., unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.e	Heating is provided by a unitary packaged or split-system heat pump, a fuel-fired furnace, an electric resistance heater or a baseboard system connected to a boiler. All heating equipment meets the efficiency requirements shown in Table 6.8.1 B, 6.8.1D, 6.8.1E, and 6.8.1F.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.f	System meets the exhaust air energy recovery requirements of Section 6.5.6.1 , unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.g	The system is controlled by a manual changeover or dual setpoint thermostat.	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.3.2.h	Heat pumps equipped with auxiliary internal electric resistance heaters (if any) have controls to prevent supplemental heater operation when the heating load can be met by the heat pump alone.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.i	The system controls do not permit reheat or any other form of simultaneous heating and cooling for humidity control.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.j	Systems are provided with a time switch that (1) can start and stop the system under different schedules for seven different day-types per week; (2) is capable of retaining programming and time setting during a loss of power for a period of at least 10 h; (3) includes an accessible manual override that allows temporary operation of the system for up to 2 h; (4) is capable of temperature setback down to 13° C during off hours; and (5) is capable of temperature setup to 32° C during off hours unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.k	Piping is insulated in accordance with values given in Table 6.8.3A and 6.8.3B. Insulation exposed to weather is suitable for outdoor service (i.e. protected by aluminum, sheet metal, etc. or painted with a coating that is water retardant and provides shielding from solar radiation).	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.l	Ductwork and plenums are insulated in accordance with Tables 6.8.2A and 6.8.2B and sealed in accordance with Section 6.4.4.2.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.m	Specifications call for ducted air systems to be balanced.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.n	Outdoor air intake and exhaust systems meet the controls requirements of Section 6.4.3.4.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.o	Where separate heating and cooling equipment serve the same temperature zone, thermostats are interlocked to prevent simultaneous heating and cooling.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.p	Systems with a design supply air capacity greater than 5,000 L/s have optimum start controls.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.3.2.q	In spaces larger than 50m ² and with design occupancy of more than 40 people per 100m ² , the system complies with the demand control ventilation requirements in Section 6.4.3.9, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO

SECTION 6 HVAC – 6.4 MANDATORY PROVISIONS AND 6.5 PRESCRIPTIVE REQUIREMENTS		Form 6.4
Reference		Standard Compliance
	Mandatory Provisions – Complete only if simplified HVAC method is not used.	
6.4.1	Equipment shown in Tables 6.8.1A through 6.8.1K meets minimum performance at the specified rating conditions in accordance with the test procedures in the tables or those referred to in Division 2 of SB-10.	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.4.2.1	Load calculations for heating and cooling systems are done as per ASHRAE Standard 183-2007 for selection of all equipment and systems.	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.4.2.2	Pressure drop through each device and pipe segment in the critical circuit at design conditions has been calculated in accordance with generally accepted engineering standards and handbooks.	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.4.3	Mandatory controls requirements are met by all the equipment in the building as outlined in Section 6.4.3.	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.4.4.1	Ductwork, piping, and equipment insulation meets the requirements of Section 6.4.4.1.	<input type="checkbox"/> YES <input type="checkbox"/> NO
6.4.4.2	Construction documents specify sealing and pressure testing of ductworks and plenums as per Section 6.4.4.2.	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Prescriptive Requirements – Complete this section if not using Energy Cost Budget Method.	
6.5.1	Each cooling system that has a fan employs either airside or waterside economizer unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.1.1	Airside economizers are capable of modulating outdoor air dampers to provide up to 100% design airflow for cooling and the system provides relief capacity for such airflow.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.1.2.1	Waterside economizers are capable of cooling supply air up to 100% of the expected system cooling load at the conditions listed under Section 6.5.1.2.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.1.2.2	Waterside economizer systems with pressure drop greater than 45kPa are isolated from main cooling loop to reduce pumping input in the normal cooling mode.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.1.3	Economizer systems are capable of providing cooling even when additional mechanical cooling is required to meet the cooling load.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.2	Simultaneous heating and cooling is limited with compliant zone, hydronic system, dehumidification, and humidification controls as per Section 6.5.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.3	Variable air volume (VAV) fan controls comply with the requirements of 6.5.3.2 and 6.5.3.3.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.3.1	Fan systems exceeding 4kW nameplate power meet prescriptive fan power limitations as per Table 6.5.3.1.1A and Section 6.5.3.1.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.4.1	Pumping systems greater than 7.5 kW employ compliant variable flow controls, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.4.2	Chilled water plants with more than one chiller and boiler plants with more than one boiler reduce loop water flow automatically whenever a chiller or boiler is shut down.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.4.3	Hydronic systems exceeding design capacity of 88 kW include controls to reset supply water temperature based on building loads or outdoor air temperature.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.4.4	Hydronic heat pumps and unitary air-conditioners include automatic water shutoff when the compressor is off and those having total pump system power greater than 3.7 kW have variable speed control.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.4.5	Chilled water and condenser water pipe is sized according to Table 6.5.4.5.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.5	All heat rejection equipment with fan motors ≥ 5.6 kW employs variable speed controls that comply with Section 6.5.5.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.6.1	Exhaust air energy recovery is provided for fan systems meeting the conditions listed on Table 6.5.6.1. Energy recovery is at least 50% effective and bypass is available to permit air economizer operation as per Section 6.5.1.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.6.2	Condenser heat recovery system for heating or preheating hot water is provided, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.7.1	Kitchen exhaust systems are designed as per Section 6.5.7.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.7.1.5	Specifications call for performance testing of kitchen exhaust systems.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.7.2	Laboratory fume hoods with a total exhaust system flow $> 2,360$ L/S comply with the variable air volume control requirements of 6.5.7.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.8.1	Heating of unenclosed spaces is done by radiant heating, except loading docks with air curtains.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
6.5.9	Cooling equipment with hot-gas bypass controls is designed with multiple steps of unloading or continuous capacity modulation, unless exempt as indicated in Table 6.5.9.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO

SECTION 7 SERVICE WATER HEATING – 7.4 MANDATORY PROVISIONS AND 7.5 PRESCRIPTIVE REQUIREMENTS		
Reference	Item	Standard Compliance
7.4.1	Load calculations for heating and cooling systems are done in accordance with manufacturer's published sizing guidelines or generally accepted engineering standards and handbooks for selection of all equipment and systems.	<input type="checkbox"/> YES <input type="checkbox"/> NO
7.4.2	Equipment used solely for heating potable water, pool heaters, and hot water storage tanks meets or exceeds the efficiency requirements of Table 7.8. or those referred to in Division 2 of SB-10.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.3	The following service hot water piping is insulated to levels shown in Table 6.8.3: <ol style="list-style-type: none"> Recirculating system piping, including piping of a circulating tank type water heater. The first 2.4m of outlet piping for a constant temperature non-recirculating storage system. Inlet pipe between storage tank and heat trap in a non-recirculating storage system. Pipes that are externally heated (e.g. heat tracing). 	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.4.1	All water-heating systems have temperature controls that are adjustable down to 49°C or lower. <ul style="list-style-type: none"> Exception: Equipment that must be protected from corrosion, as per manufacturer's installation instructions. 	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.4.2	Systems designed with pipe heating systems such as heat trace have temperature or time controls to disable during extended periods without hot water demand.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.4.3	Public lavatories have outlet temperature controls that limit the discharge temperature to 43°C.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.4.4	Tanks with remote heaters have circulation pump controls to limit operation of circulation pumps to a maximum of five minutes after the end of the heating cycle.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.5.1	Pool heaters have readily accessible ON/OFF switch without adjusting the thermostat setting. Gas-fired heaters do not have standing pilot lights.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.5.2	Heated pools have vapour retardant covers. Pools heated to above 32°C have a pool cover with a minimum insulation value of RSI-2.1 unless heated by site-recovered energy or solar energy.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.5.3	Pool heaters and circulation pumps have time switches, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
7.4.6	Heat traps are provided to all vertical risers serving storage water heaters and storage tanks.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
Prescriptive Requirement – Complete this section if not using Energy Cost Budget Method.		
7.5	Boiler systems that provide space heating as well as service water heating meet the conditions of Sections 7.5.1 and 7.5.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO

ASHRAE 90.1 & SB-10- SECTION 8,9 &10 POWER, LIGHTING AND OTHER EQUIPMENT

SECTION 8 POWER – 8.4 MANDATORY PROVISIONS		Form 8.4
Reference	Item	Standard Compliance
8.1.2	Low Voltage Dry-Type Distribution Transformers meet nominal efficiencies shown in Table 8.1, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
8.4.1	Feeder conductors and branch conductors are sized as per Section 8.4.1.	<input type="checkbox"/> YES <input type="checkbox"/> NO
8.4.2	At least 50% of all 125 volt 15- and 20-Ampere receptacles installed in computer classrooms are provided with automatic receptacle controls that function on a) time-of-day schedule or b) occupant sensor or c) occupancy signal from another control or alarm system.	<input type="checkbox"/> YES <input type="checkbox"/> NO

SECTION 9 LIGHTING– 9.4 MANDATORY PROVISIONS		Form 9.4
Reference	Item	Standard Compliance
9.4.1	Any automatic control devices used are “manual ON” or multi-level where the “automatic ON” function provides no more than 50% power unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> NO
9.4.1.1	Automatic lighting shutoff controls are provided for all interior spaces based on either a scheduled basis or controlled by an occupant sensor unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
	Schedule-based control devices are provided with independent schedules for areas of no more than 2,323m ² but no more than one floor.	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Occupancy-based control devices turn lights off within 30 minutes of all occupants leaving the space, or a signal from another control or alarm system that indicates the area is unoccupied.	<input type="checkbox"/> YES <input type="checkbox"/> NO
9.4.1.2	Each space enclosed by ceiling-height partitions has at least one readily accessible control device that independently operates general lighting within the space in such a way that occupants can see the controlled lighting with multi-step controls and occupant sensors as per Section 9.4.1.2	<input type="checkbox"/> YES <input type="checkbox"/> NO
9.4.1.3	Lighting for parking garages is controlled by automatic shutoff controls meeting the requirements outlined in Section 9.4.1.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
	Parking garage lighting is capable of automatically reducing lighting power by at least 30% based on occupancy.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
	Daylight transition zones in parking garages are controlled separately. These are automatically turned on during daylight hours and off at sunset.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
	Parking garage luminaires within 6m of perimeter walls that have a net opening-to-wall ratio of at least 40% automatically reduce power in response to daylight, except daylight transition zones.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
9.4.1.4	Automatic daylighting controls are provided for separate control of general lighting in primary sidelighted areas greater than 23m ² in an enclosed space. Multilevel photocontrol device complies with 9.4.1.4c unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
9.4.1.5	Automatic daylighting controls are provided for separate control of general lighting in daylight areas as required under Section 9.4.1.5. Multilevel photocontrol device complies with 9.4.1.5c unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
9.4.1.6	Additional control is provided to the applications listed in Section 9.4.1.6. and Div. 2 of SB-10	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
9.4.1.7	Exterior lights are shut off by an automatic photosensor when available daylight is sufficient, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
	All building façade and landscape lighting is automatically shut off overnight as per 9.4.1.7b.	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Exterior lighting not for façade, landscape lighting, or uncovered parking areas, including advertising signage, is automatically controlled to reduce lighting power by at least 30% overnight or during inactive periods.	<input type="checkbox"/> YES <input type="checkbox"/> NO
9.4.2	Exit signs do not exceed 5 W per face.	<input type="checkbox"/> YES <input type="checkbox"/> NO
9.4.4	Third party functional testing of all lighting control devices and systems is specified in the construction documents.	<input type="checkbox"/> YES <input type="checkbox"/> NO

SECTION 9 LIGHTING – INSTALLED LIGHTING POWER COMPLIANCE CHECKLIST*		Form 9.5
Reference		Standard Compliance
9.4.3	Exterior Lighting Zone _____ (Table 9.4.3A) Total Installed Exterior Lighting Power _____ W ≤ value of exterior LPA _____ W * List any exemptions that apply:	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
Prescriptive Requirements – Complete if not using Energy Cost Budget Method		
9.5, 9.6	METHOD OF INTERIOR LIGHTING ALLOWANCE CALCULATION 9.5 INTERIOR LIGHTING POWER ALLOWANCE BY BUILDING TYPE Calculation of Interior Lighting Power Allowance (ILPA) by Building Type based on Table 9.5.1.* Building Type _____ Gross Lighted Area _____ m ² Lighting Power Density _____ W/m ² Total Installed Interior Lighting Power _____ W ≤ value of interior LPA _____ W *	<input type="checkbox"/> Building <input type="checkbox"/> Space <input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
	9.6 INTERIOR LIGHTING POWER ALLOWANCE BY SPACE FUNCTION Calculation of Interior Lighting Power Allowance (ILPA) for each space based on Table 9.6.1. * Total Installed Interior Lighting Power _____ W ≤ value of Interior LPA _____ W * List any exemptions that apply:	<input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> NO
Total installed interior and exterior lighting power allowances are met.		<input type="checkbox"/> YES <input type="checkbox"/> NO

* Calculation worksheets (FORM 9.5.2 and FORM 9.5.3) are required. Where a software program is used to calculate compliance with Sections 9.4, 9.5 and 9.6, the software report may be submitted in lieu of FORM 9.5 and worksheets.

SECTION 10 OTHER EQUIPMENT - MANDATORY PROVISIONS		Detailed Form 10.4
Reference	Item	Standard Compliance
10.4.1	Electric motors comply with Table 10.4.1.A(a) and Table 10.4.1.A(b) of Division 2 of SB-10.	<input type="checkbox"/> YES
10.4.2	Service water pressure booster pumps have pressure sensor to vary pump speed and/or start and stop pumps.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	No devices are installed to reduce the pressure of all of the water supplied by any booster system or pump, except for safety devices.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	Booster pumps shut off when there is no service water flow.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
10.4.3	All elevator cab lighting systems have efficacy of not less than 35 lumens per Watt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	Elevator cab ventilation fans for elevators without air conditioning consume less than 0.7 W-s/L at maximum speed.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	Cab interior light and ventilation is disabled when elevators are stopped and unoccupied with doors closed for over 15 minutes.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
All mandatory provisions are met.		<input type="checkbox"/> YES <input type="checkbox"/> NO

ASHRAE 90.1 & SB-10 - SECTION 9 – LIGHTING COMPLIANCE WORKSHEET

FORM 9.5.2

Project:

Designer Name:

Interior Power Allowance (Building Area Method) Table 9.5.1

Building Type	Lighting Power Density Allowance (W/m ²)	Gross Lighted Floor Area (m ²)	Lighting Power Allowance (W) (LPD _x GLFA)
Total Power Allowance			

Interior Lighting Power Allowance (Space by Space Method) Table 9.6.1

Building Type	Common/Specific Space Type	Lighting Power Density Allowance (W/m ²)	Space Area (m ²)	Lighting Power Allowance (W)
Total Power Allowance				

Interior Connected Lighting Power

Space ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/Luminaire	Total Watts
Total Interior Lighting Power				

* If additional space is required to provide further information, please attach a separate sheet(s) of paper.

** If additional interior lighting power, trade-offs or exceptions are used attach calculations.

ASHRAE 90.1 & SB-10 - SECTION 9 – LIGHTING COMPLIANCE WORKSHEET**FORM 9.5.3**

Project:

Designer Name:

Exterior Building Lighting Power Allowance

Location / Application	Allowance	Area or Length (m ² or m)	Tradable Power Allowance
Exterior Lighting Zone		Base Site Allowance	
Tradable Power Allowance			

Exterior Installed Lighting Power

ID	Luminaire description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/Luminaire	Total Watts
Total Exterior Lighting Power				

* If additional space is required to provide further information, please attach a separate sheet(s) of paper.

** If trade-offs or exceptions are used attach calculations.

December 23, 2013