

## ONTARIO BUILDING CODE 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 3. 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. 350/06 AND AMENDMENTS UP TO AMENDING O.REG. 315/12).

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 three energy compliance options to meet the requirements of OBC SB-10 Division 3. Please select the compliance option selected for this project. The energy efficiency of all buildings must be designed to:*

Compliance Path		Forms to Complete
(A) Achieve the energy efficiency levels attained by conforming to the ASHRAE 90.1-2013, "Energy Standard for Buildings Except Low-Rise Residential Buildings" and Chapter 2 of SB-10 (Division 3). <b><i>This compliance path includes both prescriptive and performance path options. Please proceed to Form A.</i></b>	<input type="checkbox"/> YES	FORM A
(B) Achieve the energy efficiency levels attained by conforming to the National Energy Code of Canada for Buildings 2015 and Chapter 3 of SB-10 (Division 3). <b><i>This compliance path includes both prescriptive and performance path options. Please proceed to Form B.</i></b>	<input type="checkbox"/> YES	NECB
(C) Section 7 "Energy Efficiency" of 2014 ANSI/ASHRAE/USGBC/IES 189.1, excluding Sections 7.2.b, 7.4.7.3, 7.4.8 and 7.5	<input type="checkbox"/> YES	

**ONTARIO BUILDING CODE SUPPLEMENTARY STANDARD SB-10  
PROJECT INFORMATION – ADDITIONAL DESIGNER SIGNATURES**

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

Designer Information (Other)*:	Designer Information (Other)*:	Designer Information (Other)*:
Specialty	Specialty	Specialty
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)

\*AS APPLICABLE TO SB-10 2017 PROVISIONS AND REQUIREMENTS.

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**OBC SB-10 AND ASHRAE 90.1 - 2013 – COMPLIANCE SUMMARY****Form A**

Project:	Location of Project:
Building Permit Application No.:	Climatic Zone (SB-10 Division 3 Section 1.3):

**ASHRAE 90.1 – 2013 COMPLIANCE AS MODIFIED BY OBC SB-10 DIVISION 3**

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

ASHRAE 90.1-2013 Standard Section	Compliance Column	Form
5.4 BUILDING ENVELOPE AND SB-10 DIVISION 3	<input type="checkbox"/> YES	FORM 5.4
6.4 HEATING, VENTILATING AND AIR CONDITIONING	<input type="checkbox"/> YES	FORM 6.3 or FORM 6.4
7.4 SERVICE WATER HEATING SYSTEMS AND EQUIPMENT	<input type="checkbox"/> YES	FORM 7.4
8.4 POWER	<input type="checkbox"/> YES	FORM 8.4
9.4 LIGHTING	<input type="checkbox"/> YES	FORM 9.4
10.4 OTHER EQUIPMENT AND SB-10 DIVISION 3	<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 A-1
ENERGY COST BUDGET METHOD	<input type="checkbox"/> YES	COMPLETE SECTION A-2

**A-1: PRESCRIPTIVE COMPLIANCE – ASHRAE 90.1-2013 AND OBC SB-10**

The building design complies with the Prescriptive Compliance requirements 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
	Building Envelope Trade-Off (5.6 of 90.1)	<input type="checkbox"/> YES	FORM 5.6
Sec 6 HVAC SYSTEMS	Simplified Approach for HVAC Systems	<input type="checkbox"/> YES	FORM 6.3 or
	Mandatory + Prescriptive Path Option	<input type="checkbox"/> YES	FORM 6.4
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

**A-2: ENERGY COST BUDGET METHOD – ASHRAE 90.1-2013 AND OBC SB-10**

	Compliance Column	Form
The building design complies with the provisions of Section 11 of ASHRAE 90.1-2013, based on Division 3 of SB-10.	<input type="checkbox"/> YES	FORM 11

**SECTION 5.4 MANDATORY PROVISIONS**

Building insulation has been designed to comply with section 5.4.1 of ASHRAE 90.1-2013 as modified by Chapter 2 of OBC SB-10.

☐ YES

Building fenestration and doors have been designed to comply with section 5.4.2 of ASHRAE 90.1-2013 as modified by Chapter 2 of OBC SB-10.

☐ YES

Building air leakage has been designed to comply with section 5.4.3 of ASHRAE 90.1-2013 as modified by Chapter 2 of OBC SB-10.

☐ YES

**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 90.1-2013:**

Gross Wall Area: _____ m <sup>2</sup> Vertical Fenestration Area: _____ m <sup>2</sup> Vertical fenestration area is less than 40% of the gross wall area	<input type="checkbox"/> YES
Gross Roof Area: _____ m <sup>2</sup> Skylight Area: _____ m <sup>2</sup> Total skylight area does not exceed 3% of the gross roof area	<input type="checkbox"/> YES
Where the main entrance is located on the south orientation and the south-oriented wall area is larger than west-oriented wall area, and where the south-oriented wall area is larger than east-oriented wall area, per ASHRAE 90.1-2013 5.5.4.5, either: (a) total east and west vertical fenestration areas are each less than 25% of total vertical fenestration area for the whole building, or (b) east and west area-weighted SHGC is less than area-weighted SHGC for total fenestration Exception (from ASHRAE 90.1-2013 Section 5.5.4.5): _____	<input type="checkbox"/> YES <input type="checkbox"/> N/A  <input type="checkbox"/> YES <input type="checkbox"/> N/A
Where electric space heating provides more than 10 per cent of the heating capacity, the building envelope shall comply with the requirements of Table SB 5.5-7 of SB-10, regardless of its 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 90.1-2013 5.5.4.2.3.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
Identify SB-10 Table used for maximum U-Factors or minimum RSI-Values : _____	

**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 90.1-2013 or through calculation methods described in ASHRAE 90.1-2013 Appendix Section A9.

*For all fenestration products, compliance with U-factors, SHGC and VT 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. Where automatic daylighting controls are required in accordance with Section 9.4.1.1(e) or (f), fenestration shall have a ratio of VT divided by SHGC not less than that specified in Tables SB5.5-5 through SB5.5-7 for the appropriate fenestration area.
3. U-factor to be determined through CSA or NFRC rating or by using ASHRAE 90.1-2013 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 <sup>(1)</sup>	Space Conditioning Category <sup>(2)</sup>	Class of Construction <sup>(3)</sup>	Criteria Max. U-Value <sup>(4)</sup> or Min RSI	Design U-Value <sup>(4)</sup> or RSI	Area Weighted Avg. Used <sup>(5)?</sup>
	<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
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	<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 <sup>(1)</sup>	Space Conditioning Category <sup>(2)</sup>	Class of Construction <sup>(3)</sup>	U-Value <sup>(4)</sup>		SHGC <sup>(6)</sup>		VT/SHGC		Area Weighted Average Used <sup>(5)?</sup>
			Crit.	Des.	Crit.	Des.	Crit.	Des.	
	<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 one of the exceptions from ASHRAE 90.1-2013 5.5.4.4.1 or 5.5.4.4.2 is applicable. Please use the space below to identify the fenestration elements (if any) which an exception for SHGC is being claimed.
- (7) Design VT/SHGC ratio may be lower than the criteria if one of the exceptions from ASHRAE 90.1-2013 5.5.4.6 is applicable. Please use the space below to identify the fenestration elements (if any) which an exception for VT/SHGC is being claimed.

SHGC and VT/SHGC EXCEPTIONS	
Fenestration Element	SHGC or VT/SHGC exception from ASHRAE 90.1-2013 5.5.4.4.1, 5.5.4.4.2, or 5.5.4.6

***Note that this option may only be pursued using the procedure described in ASHRAE 90.1-2013 Section 5.6 as modified by the requirements of Chapter 2 of SB-10***

Calculated EPF for proposed building\*: \_\_\_\_\_

Calculated EPF for budget building\*: \_\_\_\_\_

Envelope performance factor (EPF) for proposed building is less than or equal to the envelope performance factor of the budget building.	<input type="checkbox"/> YES
All components of the building envelope shown on architectural drawings or installed in existing buildings have been separately described and modeled in the proposed building design, with exception for envelope assemblies that cover less than 5% of the total area of its corresponding assembly type, and whose area can be included with another similar assembly (based on thermal properties and orientation) as noted in Section 5.6.1.1.	<input type="checkbox"/> YES
A software program* incorporating the requirements of ASHRAE 90.1-2013 as modified by SB-10 has been used to calculate the EPF. A report from this software is attached.  Name of software: _____	<input type="checkbox"/> YES

***\*Note that the EPF must be calculated by a simulation program which includes the requirements of ASHRAE 90.1-2013 as modified by SB-10.***

If simplified HVAC method is used complete this form, otherwise proceed to Form 6.4.

Number of Stories:	Gross floor area: m <sup>2</sup>
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Reference		Standard Compliance
<b>6.3.1</b>	The building is 2 stories or less in height and has a gross floor area less than 2,300 m <sup>2</sup> .	<input type="checkbox"/> YES
<b>6.3.2</b>	All of the requirements in Section 6.3 as outlined below must be met by each HVAC system in the facility.	
<b>6.3.2.a</b>	System serves a single HVAC zone.	<input type="checkbox"/> YES
<b>6.3.2.b</b>	The equipment meets the variable flow requirements of Section 6.5.3.2.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.3.2.c</b>	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 6.8.1-1, 6.8.1-2, and 6.8.1-4.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.3.2.d</b>	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
<b>6.3.2.e</b>	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 6.8.1-2, 6.8.1-4, 6.8.1-5, and 6.8.1-6 as modified by SB-10 Table SB 6.8.1-2017.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.3.2.f</b>	System meets the exhaust air energy recovery requirements of Section 6.5.6.1 as modified by SB-10, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.3.2.g</b>	The system is controlled by a manual changeover or dual setpoint thermostat.	<input type="checkbox"/> YES
<b>6.3.2.h</b>	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, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.3.2.i</b>	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
<b>6.3.2.j</b>	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
<b>6.3.2.k</b>	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
<b>6.3.2.l</b>	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
<b>6.3.2.m</b>	Specifications call for ducted air systems to be balanced.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.3.2.n</b>	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
<b>6.3.2.o</b>	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
<b>6.3.2.p</b>	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
<b>6.3.2.q</b>	In spaces larger than 50m <sup>2</sup> and with design occupancy ≥ 25 people per 100m <sup>2</sup> , the system complies with the demand control ventilation requirements in Section 6.4.3.8, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.3.2.r</b>	The system complies with the door switch requirements of Section 6.5.10.	<input type="checkbox"/> YES <input type="checkbox"/> N/A



SECTION 6 HVAC – 6.4 MANDATORY PROVISIONS AND 6.5 PRESCRIPTIVE REQUIREMENTS Form 6.4		
Reference		Standard Compliance
	<b>Mandatory Provisions – Complete only if simplified HVAC method is not used.</b>	
6.4.1	Equipment shown in 6.8.1-1 through 6.8.1-13 meets the minimum performance (as modified by SB-10 Table SB 6.8.1-2017) at the specified rating conditions in accordance with the test procedures in the tables or those in SB-10 Section 6.4.1.A.	<input type="checkbox"/> YES
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
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
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
6.4.4.1	Ductwork, piping, and equipment insulation meets the requirements of Section 6.4.4.1.	<input type="checkbox"/> YES
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
6.4.5	Site-assembled or site-constructed walk-in coolers and freezers shall conform to the requirements of Section 6.4.5.	<input type="checkbox"/> YES
6.4.6	All refrigerated display cases shall conform to the requirements of Section 6.4.6., including Section 6.4.1.1 and Tables 6.8.1-1 through 6.8.1-13 as modified by SB-10.	<input type="checkbox"/> YES
	<b>Prescriptive Requirements – Complete this section if not using Energy Cost Budget Method.</b>	
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
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
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, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
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
6.5.1.3	Economizer systems incorporate integrated economizer controls per ASHRAE 90.1-2013 6.5.1.3	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6.5.1.4	Economizer operation does not increase the building heating energy use during normal operation, except as allowed under ASHRAE 90.1-2013 6.5.1.4	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6.5.1.5	Systems with hydronic cooling and humidification systems designed to maintain inside humidity at a dew-point temperature greater than 2°C use a water economizer if required by ASHRAE 90.1-2013 6.5.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
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
6.5.3	Cooling system 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
6.5.3.1	Fan systems exceeding 4kW nameplate power have fan power limitations 10% below limitations specified in ASHRAE 90.1-2013 Table 6.5.3.1.1-1 and Section 6.5.3.1.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6.5.4.1	Boiler systems with design input of $\geq 293$ kW comply with the turndown ratio specified in Table 6.5.4.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6.5.4.2	Pumping systems greater than 7.5 kW employ compliant variable flow controls, unless exempt	
6.5.4.3	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 and isolated.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6.5.4.4	Hydronic systems exceeding design capacity of 88 kW include controls to reset supply water temperature based on building loads or outdoor air temperature, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6.5.4.5	Hydronic heat pumps and unitary air-conditioners include automatic water shutoff when the compressor is off (unless units are employing water economizer) 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
6.5.4.6	Chilled water and condenser water pipe is sized according to Table 6.5.4.6.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
6.5.5	Open-circuit cooling towers have fans meeting the energy efficiency requirements of Section 6.5.5.3 and have flow turndown in compliance with 6.5.5.4.	<input type="checkbox"/> YES <input type="checkbox"/> N/A

<b>SECTION 6 HVAC – 6.4 MANDATORY PROVISIONS AND 6.5 PRESCRIPTIVE REQUIREMENTS Form 6.4</b>		
<b>6.5.5.2</b>	All heat rejection equipment provide fan controls that comply with Section 6.5.5.2, with variable speed drives on fan motors $\geq 5.6$ kW.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.5.6.1</b>	Exhaust air energy recovery is provided for fan systems meeting the conditions listed on Table 6.5.6.1. Energy recovery is at least 55% 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
<b>6.5.6.2</b>	Condenser heat recovery system for heating or preheating hot water is provided, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.5.7.1</b>	Kitchen exhaust systems are designed as per Section 6.5.7.1.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.5.7.1.5</b>	Specifications call for performance testing of kitchen exhaust systems.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.5.7.2</b>	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
<b>6.5.8.1</b>	Heating of unenclosed spaces is done by radiant heating, except loading docks with air curtains.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.5.9</b>	Cooling equipment with hot-gas bypass controls is designed with multiple steps of unloading or continuous capacity modulation, with capacity limits as indicated in Table 6.5.9 for VAV systems. Constant volume units do not have hot gas bypass.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.5.10</b>	All conditioned spaces with a door to the exterior have door switches interlocked with heating and cooling controls per Section 6.5.10, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
<b>6.5.11</b>	Refrigeration systems that are comprised of refrigerated display cases, walk-in coolers, or walk-in freezers connected to remote compressors, remote condensers, or remote condensing units meet the requirements of Sections 6.5.11.1 through 6.5.11.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A

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
7.4.2	All equipment used solely for the following purposes meets or exceeds the efficiency requirements and testing criteria of Table 7.8, as modified by SB-10 7.4.2.A, unless exempt.: <ul style="list-style-type: none"> <li>• heating potable water</li> <li>• pool heaters</li> <li>• hot water storage tanks</li> </ul> Exemptions:	<input type="checkbox"/> YES <input type="checkbox"/> N/A
7.4.3	The following service hot water piping is insulated to levels shown in Table 6.8.3-1: <ol style="list-style-type: none"> <li>Recirculating system piping, including piping of a circulating tank type water heater.</li> <li>The first 2.4m of outlet piping for a constant temperature non-recirculating storage system.</li> <li>Inlet pipe between storage tank and heat trap in a non-recirculating storage system.</li> <li>Pipes that are externally heated (e.g. heat tracing).</li> </ol>	<input type="checkbox"/> YES <input type="checkbox"/> N/A
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"> <li>• Exception: Equipment that must be protected from corrosion, as per manufacturer's installation instructions.</li> </ul>	<input type="checkbox"/> YES <input type="checkbox"/> N/A
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
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
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
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
7.4.5.2	Per SB-10 7.4.5.2, heated exterior public pools and public spas shall be equipped with pool covers, unless over 60% of their energy for heating (computed over an annual operating season) is derived from site-recovered or site-solar energy.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
7.4.5.3	Pool heaters and circulation pumps have time switches, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
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
<b>Prescriptive Requirement – Complete this section if not using Energy Cost Budget Method.</b>		
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
7.5.3	Gas service hot-water systems with a total installed gas water-heating input capacity of 293 kW or greater, shall have a minimum input capacity-weighted average thermal efficiency of 90%, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A

## 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
8.4.1	Feeder conductors and branch conductors are sized as per Section 8.4.1.	<input type="checkbox"/> YES
8.4.2	At least 50% of all 125 volt 15- and 20-Ampere receptacles (installed in conference rooms, rooms used primarily for printing and/or copying functions, breakrooms, classrooms, and individual workstations), and at least 25% of branch circuit feeders (installed for modular furniture not shown on the construction documents), 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, with exceptions as listed, as modified by SB-10.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
8.4.3	Unless exempted, measurement devices are shown in design documents to monitor the total electrical energy, as well as the electrical energy use separately for HVAC systems, interior lighting, exterior lighting, and receptacle circuits. For buildings with tenants, these systems are separately monitored for the total building and (excluding shared systems) for each individual tenant. Data recording and storage capabilities meet the requirements of 8.4.3.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
8.4.4	Low Voltage Dry-Type Distribution Transformers meet nominal efficiencies shown in Table 8.4.4, unless exempt.	<input type="checkbox"/> YES <input type="checkbox"/> N/A

SECTION 9 LIGHTING– MANDATORY PROVISIONS CHECKLIST		Detailed Form 9.4-1
Reference	Item	Standard Compliance
9.4.1.1	For each space in the building, all of the lighting control functions indicated in ASHRAE 90.1-2013 Table 9.6.1, for the appropriate space type in column A, have been implemented, as described by Section 9.4.1.1: a. Local Control b. Restricted to manual ON c. Restricted to partial automatic ON d. Bilevel lighting control e. Automatic daylight responsive controls for sidelighting f. Automatic daylight responsive controls for toplighting g. Automatic partial OFF (full OFF complies) h. Automatic full OFF i. Scheduled shutoff	<input type="checkbox"/> YES
9.4.1.2	Lighting for parking garages is controlled by automatic shutoff controls meeting the requirements outlined in Section 9.4.1.2.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	Lighting for parking garages is controlled by one or more devices that reduce lighting power of each luminaire by at least 30% when there is no activity within a zone for at most 30 minutes. Each lighting zone for this requirement cannot exceed 334 m <sup>2</sup> , except daylight transition zones and ramps without parking.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	Daylight transition zones in parking garages are controlled separately. These are automatically controlled to reduce by at least 50% from sunset to sunrise.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	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 and ramps without parking.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
9.4.1.3	Additional control is provided to the special applications listed in Section 9.4.1.3	<input type="checkbox"/> YES <input type="checkbox"/> N/A
9.4.1.4	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
	All building façade and landscape lighting is automatically shut off overnight as per 9.4.1.4.	<input type="checkbox"/> YES
	Exterior lighting not for façade or landscape, including for signage, is automatically controlled to reduce lighting power by at least 30% overnight or during inactive periods as per 9.4.1.4. (Uncovered parking areas are exempt per SB-10)	<input type="checkbox"/> YES
9.4.2	Exterior building lighting power complies with ASHRAE 90.1-2013 9.4.2 as modified by SB-10. Form 9.4.2 may be used to demonstrate compliance.	<input type="checkbox"/> YES
9.4.3	Third party functional testing of all lighting control devices and systems is specified in the construction documents.	<input type="checkbox"/> YES

SECTION 9.4 LIGHTING – EXTERIOR LIGHTING POWER MANDATORY COMPLIANCE		Form 9.4-2
Reference		Standard Compliance
9.4.3	<p>Exterior Lighting Zone _____ (Table SB 9.4.2-2–2017)</p> <p><b>Total Installed Exterior Lighting Power</b> _____ <b>W</b> ≤ value of <b>exterior LPA</b> _____ <b>W *</b></p> <p>List any exemptions that apply:</p>	<input type="checkbox"/> YES <input type="checkbox"/> N/A

\* Calculation worksheet (FORM 9.4-3) is required.

SECTION 9.5 LIGHTING – INSTALLED LIGHTING POWER PRESCRIPTIVE COMPLIANCE		Form 9.5-1
Prescriptive Requirements – Complete if not using Energy Cost Budget Method		
Reference		Standard Compliance
9.5 9.6	<p><b>9.5 INTERIOR LIGHTING POWER ALLOWANCE BY BUILDING TYPE</b></p> <p>Calculation of Interior Lighting Power Allowance (ILPA) by Building Type based on Table SB 9.5.1–2017 *</p> <p>Building Type _____</p> <p>Gross Lighted Area _____ m<sup>2</sup></p> <p>Lighting Power Density _____ W/m<sup>2</sup></p> <p><b>Total Installed Interior Lighting Power</b> _____ <b>W</b> ≤ value of <b>Interior LPA</b> _____ <b>W *</b></p>	<input type="checkbox"/> YES <input type="checkbox"/> N/A
	<p><b>9.6 INTERIOR LIGHTING POWER ALLOWANCE BY SPACE FUNCTION</b></p> <p>Calculation of Interior Lighting Power Allowance (ILPA) for each space based on Table SB 9.6.1–2017 *</p> <p><b>Total Installed Interior Lighting Power</b> _____ <b>W</b> ≤ value of <b>Interior LPA</b> _____ <b>W *</b></p> <p>List any exemptions that apply:</p>	<input type="checkbox"/> YES <input type="checkbox"/> N/A

\* Calculation worksheet (FORM 9.5-2) is required.

**ASHRAE 90.1 & SB-10 - SECTION 9 – LIGHTING COMPLIANCE WORKSHEET**
**FORM 9.4-3**

Project:

Designer Name:

**Exterior Building Lighting Power Allowance - refer to Table SB 9.4.2-2-2017**

Location / Application	Allowance	Area or Length (m <sup>2</sup> 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.

**ASHRAE 90.1 & SB-10 - SECTION 9 – LIGHTING COMPLIANCE WORKSHEET****FORM 9.5-2**

Project:

Designer Name:

**Interior Power Allowance (Building Area Method) -refer to Table SB 9.5.1–2017**

Building Type	Lighting Power Density Allowance (W/m <sup>2</sup> )	Gross Lighted Floor Area (m <sup>2</sup> )	Lighting Power Allowance (W) (LPD×GLFA)
Total Power Allowance			

**Interior Lighting Power Allowance (Space by Space Method) - refer to Table SB 9.6.1–2017**

Building Type	Common/Specific Space Type	Lighting Power Density Allowance (W/m <sup>2</sup> )	Space Area (m <sup>2</sup> )	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.

SECTION 10 OTHER EQUIPMENT - MANDATORY PROVISIONS		Form 10.4
Reference	Item	Standard Compliance
10.4.1	Electric motors are in compliance with Table SB-10 Table 10.4.1.A where applicable; otherwise, they comply with ASHRAE 90.1-2013 Tables 10.8-1, 10.8-2, 10.8-3 and 10.8-6, as applicable.	<input type="checkbox"/> YES
10.4.2	Service water pressure booster pumps have pressure sensors 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 de-energized when elevators are stopped and unoccupied with doors closed for over 15 minutes.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
10.4.4	Escalators and moving walks automatically slow to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	<input type="checkbox"/> YES <input type="checkbox"/> N/A
10.4.5	The building is designed to facilitate future installation of means to measure and monitor energy use by each energy type described in Section 10.4.5.1, per SB-10 10.4.5.3.	<input type="checkbox"/> YES <input type="checkbox"/> N/A



Project:		Designer Name:				
<b>Occupancies</b> <input type="checkbox"/> Assembly <input type="checkbox"/> Health/Institutional <input type="checkbox"/> Hotel/Motel <input type="checkbox"/> Light Manufacturing <input type="checkbox"/> Multifamily <input type="checkbox"/> Office <input type="checkbox"/> Restaurant <input type="checkbox"/> Retail <input type="checkbox"/> School <input type="checkbox"/> Warehouse <input type="checkbox"/> Other  <b>Total</b>	<b>Floor Area</b>               	<b>Annual Consumption Summary<sup>(1)</sup></b>		<b>Reference Building Energy</b>	<b>Proposed Building Energy</b>	<b>Units</b>
		Space Heating				
		Space Cooling				
		HVAC Fans				
		Pumps				
		Service Hot Water				
		Interior Lighting				
		Other				
		Other				
		Total Annual Energy				
		Total Annual Energy Cost		\$	>	\$
		Total Annual CO2e Emissions			>	
		Peak Electric Demand*			>	
		*OR Building components specified in SB-10 Division 3 Chapter 1 Clause 1.1.2.3(5) comply with the prescriptive requirements of ASHRAE 90.1-2013		<input type="checkbox"/> YES		
		<b>Reference and Proposed Building Energy Consumptions are calculated by:</b> Please specify modelling software:				
HVAC System Descriptions		Energy Efficiency Features in Proposed Building Design <sup>(2)</sup>				
Reference Building Design						
Proposed Building Design						
Building is in compliance with mandatory requirements of sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4.		<input type="checkbox"/> YES				

### Compliance Result

The design detailed in the above referenced plans complies with the mandatory requirements of the ASHRAE 90.1-2013 Standard and the additional requirements of Supplementary Standard SB-10. The calculated proposed building energy cost (design energy cost), CO<sub>2</sub> emissions and peak electric demand do not exceed the calculated reference building energy cost (energy cost budget) CO<sub>2</sub> emissions and peak electric demand. Therefore, this design **DOES COMPLY** with the ASHRAE 90.1-2013 ECB compliance methodology and the additional requirements of Supplementary Standard SB-10.

Individual certifying authenticity of the data provided in this analysis:

Signature:	Name/Title:
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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